

OCT 3 1958

THE RAILWAY GAZETTE

Price: Two Shillings

FRIDAY, SEPTEMBER 5, 1958

Annually £5 by post

When you hear of NEW DEVELOPMENTS—



SE. 1958

TRANSPORTATION
LIBRARY

think of R.T.B

The illustration, with some latitude, serves as a reminder of R.T.B. tinplate, black sheets and specially coated sheets—together with a corrugated 'Speltafast' galvanized sheet and, behind them all, a large electrical lamination, made by R.T.B. from one of their special steels.

Our history comprises a long sequence of developments which have proved of far-reaching importance to industry and to the general public. In steel making, in the production of tinplate, sheet steel and strip, in the manufacture of special steels and laminations for the electrical industry, and specially coated sheets, the name of R.T.B. has always been associated with leadership.

The latest R.T.B. development is the installation of the largest continuous-galvanizing unit in this country—for the production of 'Speltafast' galvanized strip and sheets.

Richard Thomas & Baldwins Ltd.

R.T.B.



The versatile **WAGON BEARING UNIT**

The illustration shows a cast-steel bogie fitted with the wagon bearing unit made by British Timken Ltd. This is fitted with two high-capacity Timken tapered-roller bearings, and is easily adaptable to various designs of freight cars, by the use of suitable horse-shoe adapters.

This application, carried out for British Phosphate Commissioners by Messrs. Bradford Kendall in Australia, shows the versatility of the wagon bearing unit, which is already being fitted on a large scale by British Railways.

MADE IN ENGLAND BY
BRITISH TIMKEN LTD.

DUSTON, NORTHAMPTON (HEAD OFFICE); DAVENTRY & BIRMINGHAM
Telephone: Northampton 4921-8 Telex No. 31-620 Telegrams: Britimken Northampton Telex

TIMKEN

Regd.
Trade
Mark

PATENT APPLIED FOR

THE RAILWAY CAR & LOCOMOTIVE



33, TOTHELL STREET, WESTMINSTER, LONDON, S.W.1.

Telephone: WHitehall 9233 (20 lines) Telegrams: "Trazette Parl, London"

BRANCH OFFICES

GLASGOW: 139, Bothwell Street, C.2 Central 4646

NEWCASTLE-ON-TYNE: 21, Mosley Street Newcastle-on-Tyne 22239

MANCHESTER: Century Insurance Building, St. Peter's Square Central 7667-8-9

BIRMINGHAM: 90, Hagley Road, Edgbaston Edgbaston 2466

LEEDS: 70, Albion Street Leeds 27174

BRISTOL: 8, Upper Berkeley Place, Clifton Bristol 21930

Annually £5 by post. Single copies, Two shillings.

Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Editor: B. W. C. Cooke, Assoc. Inst. T.

Vol. 109 FRIDAY, SEPTEMBER 5, 1958 [No. 10]

CONTENTS

Editorial Notes	265
Headroom for Higher Fares	267
Central African Links With Indian Ocean	268
Diesels for East Africa	268
Re-equipment of Argentine Railways	269
Poor Prospect for Railway Productivity	269
Letters to the Editor	270
The Scrap Heap	271
Overseas Railway Affairs	272
Electric Trains for Calcutta Suburban Services	274
Rolling Stock for L.T.E. Metropolitan Line	278
British Transport Commission Archive Organisation	279
Personal	281
New Equipment and Processes	284
News Articles	286
Contracts and Tenders	289
Notes and News	289
Railway Stock Market and Official Notices	292

Railway Development in the British Commonwealth

THE vital importance of railways in development of all but the smallest countries of the British Commonwealth must be borne in mind by the Commonwealth Economic Conference which assembles in Montreal in a few days' time. It is essential that plans for expanding economies be not frustrated by inadequate transport, which in most territories in Africa and Asia means, very largely, railway transport. Improvement and expansion of the railways are given a high place in some development plans. India, for instance, has given priority to railways in the Second Five-Year plan, and even in present financial difficulties has rightly made few cuts in railway projects. Other Commonwealth countries would be willing to expand their railways if funds were forthcoming, but cannot do so out of railway and other financial resources available, and have had difficulty in borrowing. Construction of railways sometimes must precede, and not follow, the opening-up of undeveloped or under-developed regions. Loans from United Kingdom and other wealthier countries will not only make possible pioneer economic development, but

are a pre-requisite for all industrial expansion, as in India and Pakistan. Nearly all African economies would benefit by loans for railway development, even where, as in the three East African territories, a cautious policy is being followed in the light of traffic expected in the near future; investment in the long run will make possible better handling of traffics, and allowance must be made for growth of traffic; increase in population is one factor to bear in mind. Some countries of the Commonwealth which recently have achieved full independence have been, and will continue to be, tempted to seek funds elsewhere if denied them by the mother country and their sisters. Loans and other financial help from outside the Commonwealth are usually associated with purchase of railway and other material from the assisting country. The value to British manufacturers of locomotives, rolling stock, and other material, of an expansion of railway systems overseas cannot be overstressed. British firms, through experience and intelligent research, are in a particularly good position to supply such material. They face strong competition in these, as in other markets. But the British Commonwealth offers great opportunities, provided that these do not go by default through failure to assist with capital in an opportune phase in development.

Spanish Five-Year Modernisation Plan

THE five-year modernisation plan for the National System of Spanish Railways (R.E.N.F.E.), details of which were issued earlier this week, envisages expenditure of 24,700 million pesetas (roughly £200 million); this is a very considerable scaling down for lack of funds, of the original plan which provided for spending 72,000 million pesetas. Some details are given in our Contracts and Tenders section. The main emphasis is on track maintenance and renewal; and also, by electric and diesel traction, on a reduction in coal extension user. All lines running north from Madrid are to be electrified—through to the Franco-Spanish frontier at Hendaye, Bilbao, Santander, Monforte—also to Saragossa and, later, to Barcelona. It is also announced that the line south to Seville is to be converted; lines already electrified will be linked up. The Board of Trade points out that it is likely that in view of the continuous heavy pressure on sterling, manufacturers will need to make special efforts to obtain a share of the contracts.

Railway Extension in Nigeria

NO time has been lost in starting work on the 400-mile Nigerian Railway extension from Kuru to Maiduguri. The placing of the first contract with Stirling Astaldi (Africa) Limited for construction of 108 miles of 3-ft. 6-in. gauge line from Kuru to Bauchi was reported in our issue of May 16, 1958. The work is under the supervision of Messrs. Rendel, Palmer & Tritton of London, and covers the construction of some 400 bridges and culverts, including a six-span bridge, and staff quarters. Telegraph lines will also be erected. The laying of the track will be carried out by the Nigerian Railway Corporation. Agricultural development in the north-east will be greatly facilitated by the new extension; expansion of cultivation has been retarded by the absence of railway outlets to the sea. The line may also, in time, form part of the projected east-west link across to the Sudan. For the immediate future, however, a useful volume of trade should develop with Chad Territory, the northern part of French Equatorial Africa, the frontier of which is near Maiduguri.

Titular Values

NOW that everybody is "somebody," as the saying goes, nobody is anybody. There has been in recent years depreciation in the values of the titles of jobs in industrial and commercial concerns and in the public services. British Railways fortunately have not followed the usual practice. Indeed time-honoured designations retained on the railways now give the outside world

including the potential railway user, little idea of the importance of some posts. Outside the railways the term "clerk," which once embraced men of senior position in the Treasury and elsewhere, now is a debased currency; today there are many "managers" and "executive officers." Railway "clerks" on the other hand include such responsible men as "trains clerks," whose duties are far more than clerical in the contemporary sense. There is a case for re-designating such posts; perhaps there could be more "assistants." To multiply the number of railway "officers" would cheapen the title, which is jealously, and rightly, restricted. In the case of district officers, including traffic managers, there is a case for the title of "deputy" when an assistant officer in fact deputises for his chief. But it would be unwise to go far in bestowing high-sounding titles.

Self-Help by Learning

RAILWAYMEN in Britain and overseas have been some of the first employees of large concerns to take steps to add to their own knowledge of their occupation and of many relevant matters. Such steps include mutual improvement classes for enginemen, and lecture and debating societies. Of the latter the oldest is believed to be the British Railways (Western Region) London Lecture & Debating Society, which was founded in 1904 in Great Western Railway days. The best feature is undoubtedly the wide scope of the lectures; the programme for the 1958-59 session includes addresses by Mr. John Ryan, a Member of the Western Area Board; by Sir Allan Quartermaine, a former Chief Engineer of the G.W.R. and the Western Region; by Sir Arthur Kirby, Commissioner for East Africa and late General Manager of East African Railways; by a prominent consulting surgeon; and by representatives of the shipping and nationalised coal industries. Meanwhile, the newly-formed London Midland Region society is starting hopefully on its second season, after successful activities last winter.

Reconstruction of Whitehaven Tunnel

WHAT has amounted practically to reconstruction of the $\frac{1}{4}$ -mile single-line tunnel between Bransty and Corkicle stations in Whitehaven, British Railways, London Midland Region, was recently completed after 26 years of night work. By 1932, serious deterioration and distortion in the lining, and movement in the walls and arch, of this 1845 structure had reduced clearances to a dangerous point. Consequently, an aggregate length of 300 ft. of the tunnel was rebuilt besides considerable lengths of side walling. However, in 1935 it was decided to carry out complete re-lining and improvement in the alignment, curvature being corrected by the Hallade method. With complete possession necessitated by limited clearances, the work entailed removal of the old lining, laying a new foundation 3-4 ft. below rail level, and rebuilding in engineering brick five to six courses thick. Sub-ballast rock foundation was also lowered and sloped for drainage. To facilitate work under the Whitehaven-Workington Road an R.C. saddle was cast in the shallow cover over the tunnel extrados. At the Bransty end a retaining wall was built behind the tunnel and a new R.S.J. bridge erected, to carry a road, in lieu of the old tunnel-end, giving a wider entrance for the splaying track. Moreover, at the Corkicle end a new portal was built 100 ft. behind the old one. The novel treatment of a sewer and underpinning of adjacent buildings were among other works involved.

Coupling Problems

THE decision of the British Transport Commission to fit British Railways goods vehicles with screw couplers seems to have been considerably more difficult to implement than was at first supposed; this is mainly, it is believed, because the Continental type of coupling fitted experimentally has been objected to on the grounds of difficulty in handling, by consignors and consignees who deal with the wagons so fitted on their own sidings. In any case with

such couplings there is the apparent disadvantage, which some people deny, of delay in yards whilst brake pipes are coupled. The Commission is understood to be actively examining the possibilities of automatic couplings. Three prototypes at least have been submitted by manufacturers for trial by British Railways. Not very much progress is reported. Effective means of coupling the air or vacuum brake pipes seems to present relatively little difficulty. Even the problem of ensuring satisfactory operation under the extremes of displacement, lateral and vertical, likely to be encountered in service are not insuperable. On the other hand, few of the wagons have headstocks which are suitable for a centre buffer-coupler, and in these side buffers must be retained to deal with the buffing loads encountered, particularly in shunting.

South African Railways Health Organisation

TWENTY-SIX years ago the South African Railways Health & Industrial Welfare Organisation pioneered the control of malaria on railway property and in areas near it in the Transvaal and Natal, and in later years, played a leading part in promoting industrial health and welfare besides accident prevention, and arrangements for sick pay. The work at present undertaken by this organisation falls into six categories: health and sanitation; industrial health and welfare; accident prevention and sick pay investigation; first aid services; aviation medicine; and the control of three local authorities, Waterval Boven, Touws River, and Aicedale. The organisation is under the supervision at railway headquarters of the Railway Health Officer; he is assisted by three medical officers, a chief health inspector, six senior health inspectors, and an administrative staff of 38. The department has a field staff of nine senior health inspectors and 153 inspectors who cover the whole of the Union, including South West Africa and Bechuanaland as far as Bulawayo. The health and welfare of a staff of more than 230,000 of all races are supervised by the organisation.

Reliability of "Dead-man" Control

ALMOST universal on electric and diesel locomotives and trains is the so-called "dead-man" control, which causes automatic brake application if the device is not operated in the correct manner. The most common form is the "dead-man" handle combined with the speed controller, which has to be depressed as long as the train is moving. Recently, however, some units, particularly locomotives, have been introduced with the control incorporated in a treadle as either an alternative or an addition to the handle, no doubt to relieve the fatigue or boredom of the driver who must keep his hand in a fixed position. To what extent the devices serve as a protection against the collapse of a driver is a matter of some conjecture as shown by the incident this week on the London Transport District Line, reported elsewhere in this issue, when a motorman collapsed over the controls, thus negating the protecting apparatus. Some railways, notably in Switzerland, make use of a "vigilance" form of control. This is arranged to sound at intervals a warning which, if not cancelled, cuts out the traction motors and applies the brakes, so bringing the train to rest even with the "dead-man" handle or treadle still depressed. A system, the Oerlikon control, is to be fitted inter alia to the eight 1,840-h.p. English Electric diesels ordered for E.A.R. & H. referred to on page 268.

Suburban Stock for Calcutta Electrification

THE industrial development of India depends much on the efficiency of the Eastern Railway, which serves the concentration of industry in and around Calcutta. The decision to work both passenger and freight traffic electrically between Calcutta, Howrah, and Burdwan at 3,000 V. d.c. was made in 1954, and electrification was inaugurated in December, 1957; only within the last two years has 25 kV. been decided on for the Grand Chord west of Burdwan. Suburban electric services after in-

auguration were operated temporarily by 3,120-h.p. electric locomotives supplied by the English Electric Co. Ltd., but these were recently transferred to other duties and replaced by 16 three-coach trains supplied by the Swiss Industrial Company (S.I.G.) and described in the article on page 275. A three-coach unit is composed of one motor coach flanked by one control trailer on each side. It is possible to combine up to three units into one nine-car train in multiple.

Examples Set by U.S.A. Passenger Trains

THE luxury and complexity of the appointments in many long-distance passenger trains in North America are well known. The dissimilarity between conditions there and in this country is often made an excuse for not adopting—or even considering—some of these features in British trains. A correspondent who recently travelled from Oakland Pier (San Francisco) to Chicago by the "California Zephyr" of the Western Pacific, Denver & Rio Grande Western, and Chicago, Burlington & Quincy Railroads, draws attention to several amenities of that streamliner. The restaurant car, for instance, is fitted with an air curtain to keep out cooking smells—which on British Railways, as on other systems, can annoy passengers in coaches adjoining the kitchen. Ample refrigerated drinking water is provided in sleeping cars; with many long non-stop runs in Britain, or journeys with only short stops, really cold water in attractive containers—not the austere Victorian carafes provided in some sleeping cars—would be welcome in ordinary coaches. Mist-proof and frost-proof windows are desirable in any stock where they are feasible; but the indications are that double glazing may become standard in British Railways main-line stock.

Freedom from Noise

A PLEASANT feature of the "California Zephyr" and similar trains is the absence of noise from the track or the diesel-electric locomotives. This, no doubt, is the result partly of air-conditioning, which necessitates shut windows, disliked by many travellers in this and other countries with temperate climates. Sealed windows also make possible the passage in the U.S.A. of the loaded train through the washing installation, which would add greatly to the pleasure of long-distance travel on many railways in Africa, Asia, and Australia. Whilst some amenities are not costly, relatively speaking, the capital outlay of U.S.A. railways on long-distance passenger stock is enormous in relation to receipts. To maintain the daily service of the "California Zephyr" between Oakland and Chicago necessitates six 12-coach sets. Each accommodates 138 chair car and 126 Pullman (sleeping car) passengers, and a certain amount of express parcels and freight is conveyed in the baggage-express car; the weight is 911 tons, and the apparently numerous train crew includes a "zephyrette" attendant.

Headroom for Higher Fares

IN considering the British Transport Commission passenger charges scheme submitted to the Transport Tribunal earlier this week, it must be remembered that two distinct, and indeed conflicting, notions affect the views of the Government and public on passenger fares. One is that the railways should pay their way whilst charging no more for conveyance of passengers than will enable obligations to be met. The other notion is that railways, having a quasi-monopoly of transport, which they are likely to abuse, must be prevented by statutory procedure from being able to overcharge; this conception dates back to the early days of railways, and takes no account of the fact that the railways' monopoly, if it ever existed, has almost disappeared, and that charges tend to find their own level in the competitive world of transport. Both ideas are incorporated in legislation and statutory regulations, including the slow and cumbersome machinery which regulates alterations in railway rates and charges.

There is also the popular prejudice against paying fares—much stronger than the normal human reluctance against paying for most other things; figures issued by the Ministry of Labour & National Service show that out of all personal incomes in Greater London, out of a total expenditure of £13 3s. 9d., 24s. 5d. is for drink and tobacco, 5s. 3d. for travel to and from work, and 6s. 10d. for other travel; also that travel on British Railways and London Transport railways accounts for only 2d. out of every £ of personal expenditure in Great Britain. These strong feelings, however unreasonable, are respected by all Governments for political reasons, and are one cause of the continuance of restrictions on the freedom of the nationalised transport undertaking to fix and to alter its own charges in accordance with business principles, and for the extensive powers of the Transport Tribunal. Meanwhile the Commission must make the most of existing arrangements to try to achieve financial equilibrium.

Because it may find it necessary in the next few months to increase passenger fares, the Commission has submitted to the Tribunal the passenger charges scheme outlined on page 286—in effect proposals for increasing the maximum up to which it may possibly feel bound to charge at some future date. The amounts of the problematical increases vary: they include 50 per cent for ordinary railway fares (from 2d. to 3d. a mile) and up to 50 per cent, depending on distance, for season tickets. The increases for which powers are sought are, like past fare increases, much less in proportion than those in the prices of other commodities. In August, 1957, at the last assessment, the average British railways fare (including reduced fares) per mile was only 115 per cent above 1938 level, against an average rise of 165 per cent in retail prices. The increases in the cost of travel moreover have been relatively infrequent. In any case, public transport should be able to alter its charges when commercial considerations necessitate this. These percentages have alarmed some sections of the Press. Whether the lodging of the scheme is well timed is debatable. All proposals for fare increases, however, are unpopular, at whatever season they are made; and as hearings before the Transport Tribunal take long—mainly because of the voluminous objections which must be heard, and not because of dilatoriness on the part of the Tribunal—it is unlikely that any Tribunal judgment can be expected before the end of this year.

It must be emphasised that the ceilings are maxima to which it is not intended to raise fares in the foreseeable future unless circumstances make this necessary. It is unlikely, for instance, that ordinary railway fares will have to be raised in the next few months by more than 10 per cent, if at all—though there may be new factors, such as increases in railway wages which might be recommended as the result of the forthcoming independent inquiry. Increases in passenger traffic will certainly stave off increases in fares. To exceed the proposed maxima is out of the question at present. Threepence a mile, for instance, even as a problematical maximum is a great deal; there are grounds for thinking that it would be folly to try to sell public passenger transport at that rate, bearing in mind private motoring—unless, of course, there is catastrophic inflation, for which charges schemes can hardly be expected to provide. A great deal of traffic moreover is carried at concession fares of one kind or another. The scheme provides for increases in all manner of passenger traffic charges. They include sleeping car supplements, seat reservation, dog tickets, luggage in advance, and left-luggage charges. A novel feature is the proposal to charge up to twice the proposed maximum fare, on London Transport all-night bus and trolleybus routes, to offset heavy working losses; this is an early example of applying the principle of making the costly route pay its way, at least to greater extent than before. Abolition is proposed of the obligation to issue "early morning" return tickets.

British Railways and London Transport are fighting for economic stability—and even for their existence—in a tough competitive world. Competition will keep fares down. The nationalised transport undertaking knows on which side its bread is buttered, which is not the side of insensate increases in charges.

Central African Links with Indian Ocean

HOW far the eventual completion of the Mozambique Railway westwards to Lake Nyasa will, by affording direct rail communication between the eastern, or Portuguese shore, of that lake and the port of Mozambique, change the pattern of transport from and to the lake region, is problematical. The harbour facilities at Mozambique will have to be improved. Meanwhile the Portuguese authorities appear to be concentrating on improving the port of Beira, terminus of the railway route from the British Commonwealth territory of Nyasaland via the two British-owned concerns, Nyasaland Railways and the Trans-Zambesi Railway.

Both appear to flourish. The reports of Nyasaland Railways Limited and the Trans-Zambesia Railway Co. Ltd., of which Messrs. W. M. Codrington and V. L. Oury are the respective Chairmen, shows that in the year ended December 31, 1957, increased economic activity in Nyasaland brought increased traffics and intensified employment to both companies. The most significant increases in traffic carried by the T.Z.R. were in clinker for Nyasaland, 28,074 tons; general merchandise, 7,800 tons; sugar for export, 6,335 tons; cassava 5,657 tons; sleepers, piles, and timber, 4,726 tons; and unginned cotton 3,718 tons. The number of passengers carried during the year rose by 24,492 to 178,106 and revenue from this source amounted to £108,216, an increase of some $7\frac{1}{2}$ per cent. Operating receipts amounted to £1,067,292 compared with £1,011,813 in the previous year. Expenditure, including provision for renewals, amounted to £790,021 (£761,545) resulting in net receipts of £277,271; these compare with the figure of £250,268 in 1956.

Operating receipts of the Nyasaland Railways amounted to £1,087,924 compared with £1,036,454 in 1956, an increase of 5 per cent. Expenditure, however, rose from £819,031 to £881,682, an increase of 8 per cent, leaving a net operating surplus of £208,242 compared with £271,423 in 1956, a decrease of 4 per cent. The tonnage of export traffic from Nyasaland decreased during the year from 107,743 tons in 1956 to 97,179 tons. Import traffics, however, again increased both in tonnage and revenue. Petroleum products rose by 3,783 tons to 25,398 tons, and fertilisers slightly increased from 11,397 tons to 12,336 tons.

There was, however, a large decrease in the import of cement which fell from 30,860 tons in 1956 to 13,240 tons. This decrease was the direct result of the opening of the Nyasaland Portland Cement Company factory at Mudi. For the time being, until the cement company is able to make clinker from local limestone for the manufacture of its cement, the Nyasaland Railways will gain from this class of traffic; in the year under review 29,858 tons of clinker were imported compared with 1,874 tons. The total number of passengers carried during the year was 377,320 compared with 276,857 last year. This total for the year represents an encouraging increase in all classes of travel.

During the year, the Trans-Zambesia Railway received a further sum of £248,000 from the Government of the Federation of Rhodesia & Nyasaland, so completing the total of £475,000 which the Government agreed to advance to cover the cost of rolling stock and ancillary works to be provided under the second and final phase of the company's five-year programme of capital works, covering the period 1953/57. Of the total amount, £86,188 has been dealt with by further hire purchase agreements which have recently been completed for the acquisition, over a period of 33 years, of two "G" class locomotives and two petrol tank wagons, which went into service during the year under review.

Since the close of the year, two more "G" class locomotives, four fourth-class coaches, six low-sided bogie wagons, and one petrol tank wagon have been put into service. In addition, 20 high-sided bogie wagons are now in course of being delivered.

Since the war the two companies, whose rolling stock is pooled, have increased the number of rolling stock units

to the following extent: locomotives by 121 per cent, wagons by 163 per cent, and passenger coaches by 100 per cent.

In the year ended December 31, 1956, the tonnage handled at the port of Beira showed a reduction of some 5 per cent. This was expected with the opening of the new rail link between Southern Rhodesia and Lourenço Marques which had its first full year's operation in 1956. During 1957, however, the tonnage handled, 2,955,949 tonnes, constituted a record, being 13 per cent more than in the previous year, which indicates that the additional rail route to and from the Rhodesias does not constitute a threat to Beira's prominence as a port. The projected railway between Nyasaland and Tanganyika is not likely to be constructed for a long time; so that the future of the outlet via Beira is bright.

Diesels for East Africa

THE first result of the decision of the East African Railways & Harbours to introduce diesel traction on the Nairobi-Nakuru and Nakuru-Kisumu sections, has been the order for eight 1-Co-Co-1 diesel-electric locomotives placed last week; the contract, as recorded in our Contracts and Tenders section, was awarded to the English Electric Co. Ltd. A feature of these units is the setting of the 12-cylinder charge-cooled engine to a site rating of 1,840 b.h.p. at an altitude of 5,500 ft. This has been possible by after-cooling of the engine, which, following development over the whole range of engines, is now the company's standard practice.

At this rating these new locomotives will be expected to haul trailing loads of 700 tons at a maintained speed of just over 15 m.p.h. at altitudes between 5,500 ft. and 7,800 ft. against a compensated gradient of 1·5 per cent (1 in 75). On the level a maximum of 700 tons will be handled up to 45 m.p.h., which is the maximum speed in the sections where operation is envisaged. Basically the locomotives will follow the manufacturer's normal practice for units of this size. The weight is around 100 tons and maximum axleload is 13·5 tons. Length over headstocks is 41 ft. 6 in. The maximum tractive effort is 53,000 lb. at 30 per cent adhesion, and continuous is 44,500 lb. from a driving wheel dia. of 37½ in.

With its two four-axle bogies—three driving axles and one guiding axle carried in a subsidiary truck—the under-gear will generally be similar to the 3½ 2,000 h.p. diesels supplied by the company to the 3-ft. 6-in. gauge Rhodesia Railways. In the design provision has been made to allow conversion if required at a later date, from metre to the 3-ft. 6-in. gauge. Bogies frames are one-piece steel castings, which carry the driving axles, each having a nose-suspended motor, via Timken roller bearings and laminated springs.

The superstructure resembles the builders' design for the 13, 1,000-h.p. A1A-A1A locomotives supplied to the Rede Ferroviaria do Nordeste in Brazil, in 1954. It is of the narrow bonnet type, with a full-width driving cab set towards one end of the locomotive. The windscreen is set back from the front of the unit so forming a nose portion in which are located the air reservoirs and one of the traction motor blowers. This arrangement of cab and bonnet superstructure enables one-man operation of the locomotives in either direction, although normally they will be operated nose-first. Controls for m.u. working are incorporated. Besides the normal automatic air brake equipment for locomotive and train, dynamic braking facilities are included.

The decision of the E.A.R. & H. to apply diesel traction on the two sections was taken after a report, which was the subject of editorial comment in our January 17 issue, had been prepared on the motive power needs of the railway. The report analysed the respective costs of electrification at 3,000 V. d.c. and 25 kV. 50-cycles a.c., and of diesel traction on the Mombasa-Nairobi-Nakuru sections of the main line; it favoured diesel-electric traction, but with the proviso that the situation should be considered again in four or five years' time before diesel traction is

more widely applied. This is because the management considers that during that period circumstances might have changed so as to favour the introduction of electric traction or the use of diesel-hydraulic rather than diesel-electric locomotives. It is clear that technical advances in any, or more, of the fields of locomotive construction and engine and transmission components might well give one form of transmission a clearer advantage over another than appears at present. £1·1 million has been earmarked for the purchase of further more powerful diesel locomotives at this later stage. E.A.R. & H. states that the type to be obtained will depend largely on the experience gained with the locomotives now on order.

The performance of these English Electric units will be watched closely, for the E.A.R. & H. already has nearly 30 North British diesel-hydraulic locomotives of 300, 500, and 855 h.p., operating in the Mombasa area, and doubtless comparisons will be made between these rival forms of transmission where possible. Satisfactory performance by the new 1,840-h.p. locomotives is probable, as the makers have wide experience of building diesels for African railways, more particularly in Egypt, Ghana, Nigeria, and Rhodesia, with which these railways on the whole appear to be satisfied.

It is noteworthy that the company won the order in the face of strong competition, tenders having been invited by the Crown Agents for Oversea Governments & Administrations from 30 firms in eleven countries—Australia, Belgium, Canada, France, Germany, Holland, Italy, Sweden, Switzerland, U.K. and U.S.A. Of these firms, 15 quoted tenders; only two were considered to cover designs most suitable for the operating conditions envisaged. Apart from technical considerations, it is of interest that the English Electric tender was the lowest of any received.

Re-equipment of Argentine Railways

THE survey of the economic situation of Argentina, prepared by the Economic Commission of Latin America at the request of President Frondizi, deals *inter alia* with the railways, the condition of which is described as deplorable. Deterioration in the capacity and quality of railway and other transport is stated to have undermined the whole of the Argentine economy, threatening it with a creeping paralysis. As to the railways, almost the entire plant and equipment, the report maintains, must be renewed, with priority for the track and motive power. The latter aspect is being gradually remedied by purchase of diesel locomotives, but the position of the permanent way is responsible for excessive wear and tear and general inefficiency. In 1954 it was estimated that of the total of some 28,000 miles of track, 80 per cent of the rails were over 20, and 54 per cent were over 41 years old; and their replacement had become a matter of considerable urgency for reasons of safety.

The Commission recommends formation of plans to handle a 39 per cent increase in suburban travel, a rise of 117 per cent in long-distance passenger traffic, and an 85 per cent increase in freight by 1967, and suggests the following gross minimum requirements:

	Present fleet	To be replaced	New units required
Steam locomotives	3,831	2,331	nil
Diesel	321	5	1,000
Passenger vehicles	4,600	1,400	3,200
Goods	84,000	27,000	35,200

The gross investment required in the railways during 1958-67 is estimated by E.C.L.A. at 42,400 million pesos, including the equivalent of \$U.S.A. 915 million for imports.

The section of the report dealing with transport ends with the remark that an end must also be put to the present paralysis in road construction; river and sea transport must be improved by replacing obsolete craft; and all aircraft now flying should be replaced within the next 10 years.

The urban transport system is bad in most Argentine cities, more particularly in Buenos Aires. The expenditure in foreign exchange, up to 1967, in million of U.S.A. dollars, is estimated as follows: road building, 50; motor transport, 260; river transport, 39; ocean transport, 331; ports, 80; airlines and airport, 135; urban transport, 30; total U.S.A. \$925 million.

British manufacturers of steam locomotives and equipment for them have already done, and are doing, much to improve the position on the railways by delivering badly-needed spare parts for the steam motive power. In view of the past experience of British industry in supplying all kinds of railway equipment to Argentine railways, and of the exceptional knowledge of their conditions and requirements possessed by many people in this country, Britain is in a position to help Argentina in re-equipping its railway system, to mutual advantage.

Poor Prospect for Railway Productivity

(By a correspondent)

SUCCESSIVE issues of *Transport Statistics* do not bring a ray of hope for an early improvement in the amount of work performed by our railways. Number 7 of this year's series covers the four weeks from mid-June to July 13, when the railways used to originate over 20 million tons of freight train traffic. This year only 18,049,000 tons were forwarded. That was a decrease of 2,421,000 tons, or 11·8 per cent, from 1957 and swelled the loss of traffic in 28 weeks of the year to 13,964,000 tons, or 9·1 per cent below last year's volume. No longer can increases in heavy traffics make good the persistent decline in merchandise carryings since 1948, which in nine years reduced the tonnage of high-rated goods from 56 to 42 million tons. A setback of about 13 per cent in the output of iron and steel has caused a slump in mineral traffic and after the middle of June coal production was disappointingly poor.

In four weeks to July 13, the railways originated 2,762,000 tons of merchandise, a decrease of 337,000 tons (11 per cent). Mineral tonnage at 3,983,000 tons was down by 1,089,000 tons (21·5 per cent). Coal and coke declarations totalled 11,303,000 tons, 995,000 less than a year ago (8 per cent). Ton-miles decreased at almost the same rate as tonnage, 183,266,000 fewer being worked. Evidently another substantial fall in tonnage occurred in the next four weeks to August 10, when receipts from merchandise were 12 per cent lower, while mineral receipts decreased by 24 per cent and revenue from coal and coke by 10 per cent.

During the first eight months of 1958 our railways have worked far below their capacity as freight carriers. The statistics for 28 weeks give total ton-miles as 10,498 million, 1,277 million, or 10·8 per cent, less than last year's figure. Movement performed by the railways declined more acutely than the quantity of traffic handled. This trend is reflected in total receipts. For 28 weeks revenue from merchandise, minerals and coal class traffic totalled £148,145,000 against £158,309,000 last year, a difference of £10,164,000, or 6·4 per cent. The British Railways Productivity Council was said to have watched the downward trend of freight traffic with concern in 1957 and to have discussed steps necessary to reverse the movement. In 1958 action is required.

PASSENGER TRAFFIC

There is no prospect of the passenger department earning enough net revenue to offset the losses of the goods and mineral departments. In six months to June 30, British Railways carried 526,325,000 passengers, 4,654,000 fewer (or nearly 1 per cent) than in the first half of 1957. The resultant takings were £64,234,000, a decrease of £1,547,000, or 2·3 per cent. First class passengers numbered 10,572,000, a decrease of 1,508,000, or 12·5 per cent; they paid £7,341,000, about £502,000, or 6·4 per cent less than first class takings last year. In the month of June 10,193,000 more journeys were made, an increase

of 11·6 per cent, but 3,588,000 were credited to season ticket holders and takings were £381,000 less, a drop of 2·8 per cent.

For 28 weeks to July 13 passenger receipts were £70,336,000 against £72,496,000, a fall of 2·9 per cent. Working costs will be high this year because many inter-

ruptions to train services caused by mishaps and bad weather. The maintenance of passenger rolling stock will also be costly, as the percentage of vehicles under repair is rather large. Above all, the upward surge of passenger business in 1957 seems to be gradually fading out.

LETTERS TO THE EDITOR

(*The Editor is not responsible for opinions of Correspondents*)

Motive Power Policy

August 25

SIR.—A recent news release from the largest manufacturer of diesel locomotives in the U.S.A. features the completion of the 1,000th "re-manufactured" diesel-electric locomotive, it being a 12-year-old unit, built originally in 1946.

Inasmuch as there were not more than 500 diesel locomotives in line haul service on the U.S.A. railways in mid-1943 (15 years ago) and approximately 1,450 diesels in shunting service, this seems to confirm the opinion long held by the writer, with others, that the diesel locomotive in line haul service has an economic life of but 15 years, while the life of such locomotives in shunting service may be somewhat longer, up to 18-20 years.

The news release states further that this rebuilt unit is now rated at 2,400 h.p. and the cost of rebuilding, to the railway, is \$167,600. (The original locomotive was rated at 2,000 h.p., engine rating, and cost approximately \$180,000 in 1946. The tractive force remains about the same.) It is apparent that this is virtually a new locomotive, and under standard Interstate Commerce Commission accounting must be carried on the railway books as such, in spite of containing a few of the original parts. The original unit had to be written off in 12 years, and the rebuilt unit now must be financed as a new unit.

Regardless of the savings in operating expenses claimed for the diesel locomotive, some of which have been very much exaggerated, the fact remains that this type of motive power is probably the most expensive type ever to be used on the American railways because of its being such a large consumer of capital funds, by virtue of its relatively short life.

The expenditure for diesels by the American railways since 1940 has been over \$3·6 billion. That the major part of this investment must be replaced within the next 10 years seems to be confirmed now by the principal manufacturer. The outstanding economic advantage of railway electrification in comparison with such capital expenditure seems worthy of emphasis.

Yours faithfully,

H. F. BROWN
Consulting Engineer

Gibbs & Hill, Inc.,
Pennsylvania Station, New York 1, N.Y.

August 24

SIR.—Thank you for your comments on my letter published in your issue of August 15. Whatever may be "common knowledge," I am certainly not aware of any spectacular achievements on the part of diesel-electric locomotive working sufficient to make any appreciable difference in the overall picture. In fact I would suggest that the only "discovery" made lately (if one can still make discoveries about such an old, well tried and well documented machine), is that the ordinary diesel-electric of up to 2,400 b.h.p. offered far too low a d.b.h.p. to enable any worthwhile improvement to be effected when compared with any of the larger steam jobs.

As to freight working, as the basis of comparison will naturally be the smaller 0-6-0 machines, even an 800-h.p. diesel should be able to show an improvement but to show just how little difference motive power actually makes we might take a section which has already been fully

modernised so far as locomotive power is concerned, the Manchester-Sheffield line. As an electric line this is poor, with machines of very low power; but it offers very much the best result which could be obtained using single-unit diesel-electrics of 2,000 h.p., with a few "Deltics" thrown in for good measure. With most freight diesels on order of half that power, a study of operating results there might dispel many illusions.

The economic angle is usually ignored and the replacement of a few £8,000 coal-burners by diesels worth anything up to £200,000 each is accepted as something quite normal. The plan for the Western Region, with 200 steam giving way to 130 diesel locomotives, may be fine; but it could give every diesel a fixed charge of around £1,000 a month which it has to meet either by increasing traffic or reducing costs. Small wonder that the U.S.A. passenger train is almost a thing of the past, with such charges to be met out of declining traffic.

On electrification, you suggest that things are going well. I say that apart from my own view, if we could get the views of some of those railway builders of a century ago and show them the amount of time, money and effort which has been expended already without producing a single mile of electrically operated track they would have a fit. I can understand, to a point, the problem of clearances with 25,000 V., but what possible excuse is there for the fact that even the simple third rail will not be in use until next year?

Yours faithfully,

L. IRVINE-BROWN

West Shore, Hythe, Southampton

Closure or Modernisation

August 25

SIR.—There is hardly one Swiss familiar with railway problems who would agree with Mr. John Rodgers' statement in his letter in your August 15 issue, in which he maintains that railways are well protected from competition in this country. In fact it is the increasing competition from road traffic, to which there is practically no limitation, which makes life so hard for the many private railway undertakings which share among themselves nearly half the Swiss railway network. Private capital is certainly as enterprising in Switzerland as anywhere else, but will not be risked in a venture which affords no prospect at all.

On various occasions, however, the people of several cantons have voted the credits for the modernisation of their local railways even against the advice of experts who strongly recommended replacement of rail by road services. Thus the people have made use of their sovereign rights; as they also vote the taxes they want to pay, this is a splendid plebiscite in favour of railways. Similar action, however, is not to be considered in respect of a purely tourist rack railway which operates for a few months in the year and has to dismantle and rebuild most of its many bridges every year and to repair considerable damage caused in winter by avalanches.

The Swiss travel in a year nearly double the mileage travelled by British people. They really like their railways, but are nevertheless realists.

Yours faithfully,

H. R. STUDER

Rotackerstrasse 16, Wallisellen, Switzerland

THE SCRAP HEAP

Ensuring a Quick Return

For every day a freight car of another (foreign) railroad is on B. & O. property, our company pays a *per diem* charge of \$2.75. We receive a like sum from the other roads for each day one of our cars is in their possession. In the year 1957, B. & O. paid out over \$45 million in *per diem* charges. Twelve o'clock midnight is a very important hour. It signifies the passage from one day into the next, and foreign cars held beyond that time incur another day's *per diem*. Bearing this in mind, let's see that foreign cars go home today, rather than tomorrow.—*Staff notice from Mr. A. W. Conley, General Superintendent, Transportation, Baltimore & Ohio Railroad.*

Music at Waterloo

Something strange is going on behind the loudspeakers at Waterloo Station. . . Early last week, instead of the band of the Scots Guards, there came the sophisticated tones of the George Shearing Quartet. Miss Becky Robbins, the lady who used to put the records on at Waterloo, tells me that this break with tradition is the result of the station's record-player wearing out.

Previously she used to choose the records with conscientious regard for her audience. She would put on Scots reels for an International at Twickenham, dreamier music for late at night, and "something really romantic for the Saturday afternoon honeymoon special." But now that the station has bought a new record-player, and gets

all its music in pre-recorded tapes, the personal touch is all but gone.—"Atticus" in "The Sunday Times."

Ship Repair at Railway Workshop

The extensive engineering facilities of the Western Australian Government Railways Midland Junction workshops came to the rescue of a ship in distress recently. The vessel, the *Iron Spencer*, damaged a rudder shaft while berthing at Kwinana Jetty. The shaft was 16 ft. long and 15 in. dia. and because of its size, and the specialised and heavy equipment required to effect a repair, it could not be handled by any establishment in Western Australia other than the railway workshops. Despite the capacity of these shops, improvisation was necessary. It included heating over open fires for 6 hr. and then truing under a 1,000-ton press. Because the job was urgent, 12 men worked continuously from 7.30 one morning to 1.45 the next. When repaired the shaft was within $\frac{1}{64}$ in. of complete accuracy. Six large rudder bolts, weighing more than 1 cwt. each were also manufactured as a special request.

Coal Traffic at Marylebone

The Great Central Railway Company has decided to commence carrying coal to Marylebone Depot, London, on July 25, and at the same time it will convey coal from the important coalfields touched by that company. The line is in direct communication with collieries having an aggregate of 70 million tons of coal per annum to dispose of, and sinkings are in progress at various points so that the total should shortly be enormously increased. The sidings already laid down at Marylebone will find accommodation for upwards of 300 wagons.—From "The Financial Times" of July 22, 1898.

[The London extension of the G.C.R. was first opened for coal traffic on July 25, 1898; for passengers on March 15, 1899; and for general goods traffic on April 11, 1899, when the goods depot at Marylebone was opened. Compared with the expected importance of coal traffic, the present amount handled is only some 250 tons a week.]

Wild Life on L.T.E. Lines

Should you ask a London Transport railwayman what he thinks is the most rural section of our system the odds are ten to one that he will refer you to the Metropolitan line beyond Rickmansworth. . . Judging by a recent glimpse of the Epping-to-Ongar section on the Central line, this outpost of the Underground would run the Metropolitan very close. . .

The five-mile stretch of single line begins at the small market town of Epping and runs through rolling, well wooded country with, for many miles, rarely even a cottage in sight. . .

Last November the Eastern Region steam trains, which had operated the

train service on behalf of London Transport, were withdrawn, and red tube cars went into operation on the newly-electrified track. . . On our recent trip we counted something like a dozen pheasants rise from the fields alongside the tracks or even flurry across the path of our train as we ran through farmland and woods. One of the motormen reported: "It is nothing at all unusual for us to see a badger as we are driving along, not to mention the large number of rabbits which seem to survive in this part of the countryside."

The outer section of the Metropolitan with its brown compartment stock trains hauled by steam engine presents a conventional picture of a railway in the country. But the sight of the red electric tube trains passing through leafy glades and between cornfields is something quite unusual.—From "London Transport Magazine."

Train Hits Swan

A swan flying over Barnes railway bridge was struck by a train. Police rescued the swan, which had a broken leg, from the track. It was taken to the R.S.P.C.A. clinic at Putney.—From "Evening News."

Early Railway Inn Sign

The North Midland Railway was amalgamated with others to form the Midland Railway in 1844; its designation therefore must be one of the oldest railway names to be borne today by an

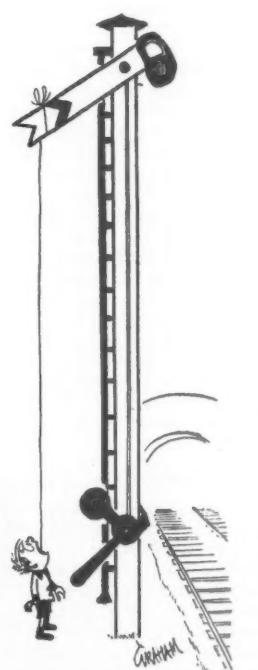


Photo]

[J. P. Wilson

Inn sign at Stretton, Derbyshire; the North Midland Railway was amalgamated in 1844

inn, and considerably older than that of the West Midland Railway, borne by the hotel illustrated in our July 18 issue. The accompanying illustration, sent us by a correspondent, shows the sign of the North Midland Railway Hotel at Stretton, in Derbyshire.



Reproduced by permission of "Punch"

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

RHODESIA

C. & D. Service at Gwelo

The railways are now operating their own C. & D. service at Gwelo. This is the result of discussions with the Chambers of Commerce and Industry, with the object of accelerating collection and delivery. The regular cartage service operates within defined limits but special arrangements may be made to meet the requirements of rail users situated outside the cartage area.

Except for express goods services at certain places, this is the first urban station-to-customer cartage service to be undertaken within the Rhodesia Railways organisation. In effect the Gwelo system will be similar to those operated by contractors at other centres, notably Salisbury and Bulawayo.

VICTORIA

Extension of Electrification

Preliminary work has started on the construction of an electric line from Upper Fern Tree Gully to Belgrave, a distance of three miles. This is to replace a 2-ft. 6-in. gauge line which was formerly worked from Fern Tree Gully to Gembrook by steam but which was closed in 1953. Two years later services were restored between Fern Tree Gully and Belgrave as a tourist attraction during week-ends and holidays. This service ceased last February.

The narrow-gauge track has some very heavy grades and sharp curves, and is unsuitable for broad-gauge electric trains. The project will, therefore, be virtually a new line to Belgrave from Fern Tree Gully, and will be the first major extension to the suburban network since the completion of the Glen Waverley line in 1929. An amount of £20,000 has been allocated to the new project during the current financial year for land acquisition, survey work, bridge construction, and earthworks. Level

crossings between Fern Tree Gully and Belgrave will be replaced by bridges. New station buildings will be built at the two intermediate stations, Upwey and Tecoma, and also at Belgrave. Tecoma will have an island platform and will be a crossing station. The new station at Belgrave will be situated slightly to the east of the present one and will also have an island-type platform. It is estimated that the project will cost £350,000 and will take three years to complete.

Express Goods Service

A six-day goods service from Melbourne to Perth has been established by the railways. Goods leave Melbourne each Wednesday at 2.30 p.m. and reach Perth at 12.28 p.m. the following Tuesday. Before this was introduced, the time taken for the transcontinental service was 10 days or more. The new facility is expected to stimulate rail bulk loading and other urgent traffic. Other fast freight trains also leave Melbourne for Perth on Mondays and Thursdays each week. Goods dispatched by these trains arrive in Perth eight days later. The Western Australian Railways co-operated in the acceleration of the services by providing special connecting freight trains from Kalgoorlie to Perth on Mondays and Thursdays.

C.T.C. for Suburban Line

The first C.T.C. on a suburban line in Victoria is shortly to be installed on the East Malvern-Glen Waverley section. A control panel in the signalbox at East Malvern will enable the signalman there to control all train movements over the six miles of line to Glen Waverley and at four intermediate stations, obviating the necessity for signalmen or station-masters to operate signals and points along the route.

A form of remote control already operates on the Melbourne-Geelong line where two crossing loops, each 2,000

ft. long, between Werribee and South Newport are controlled by signalmen several miles away. The use of C.T.C. at East Malvern will serve as a training ground for staff of the Victorian Railways if an installation on a large scale, as proposed, is made on the future standard-gauge route between Melbourne and Albury, New South Wales.

WESTERN AUSTRALIA

Safe Handling of Freight

A specially designed inflatable dunnage is being tried by the Government Railways in its campaign to promote safer handling of goods. The equipment was used for the first time in the State in a wagonload of bottled beer consigned from Perth to Bunbury. The crates of bottles were loaded at each end of the rail wagon and dividing boards used in the central space of the load. The dunnage was then placed between the dividing boards and inflated by a portable compressor until the entire load was secure and unable to shift. The consignment arrived at destination in perfect condition. Further trials will be made with such items as cement roofing tiles and drainage pipes, which are particularly susceptible to damage in transit through shunting shocks, rubbing, and so on.

NEW ZEALAND

Log Traffic

Log traffic on the Murupara branch line last year, from April, 1957, to March, 1958, showed a substantial increase over that of the previous year. The tonnage of logs conveyed over the 36-mile line to the pulp and paper mill at Kawerau was 525,378, an increase of 133,828 tons. This traffic is conveyed by a service consisting of four freight trains every working day. A fifth freight train runs on three or more days each week to cater for other traffic. Each log train from Murupara, worked by two "Dg" class diesel-electric locomotives, comprises 20 "UL" bogie wagons conveying 560 tons of logs, and a brake van. The gross weight of the train, excluding the locomotives, is 835 tons. The existing service, therefore, can convey some 2,200 tons of logs to Kawerau each day, or 11,000 tons a week.

Suburban Line Improvements

The railway northward from Wellington is to be realigned and duplicated between Porirua, 11 miles, and Plimmerton, 15½ miles. This will link the present double-line sections and ultimately result in a high-speed, double-track line for 20 miles out of Wellington through a rapidly developing residential area.

Between Porirua and Plimmerton, the



New station buildings under construction at Porirua, New Zealand Railways, in connection with suburban line improvements; the existing station is on the left

present single-track line follows a tortuous course, with curves down to 10 ch. radius. The new project involves, in effect, the construction of some three miles of new double-track railway and improvement of another mile. Construction of the new embankment by the Ministry of Works began early this year. On the new line, curves will have a minimum radius of 30 ch., enabling passenger trains to maintain 50 m.p.h. without restriction. A preliminary estimate indicates that suburban trains over the new line will be able to run from Porirua to Plimmerton, with stops at Parekata and Mana, in about nine min. compared with the present 12.

UNITED STATES

Pennsylvania Lightweight Train

The Pennsylvania Railroad has acquired from the Budd Company a six-coach multiple-unit electric train of Pioneer III stock, for service on suburban routes round Philadelphia, after testing a prototype Pioneer III car for 120,000 miles of main-line running. Three of the new cars are provided with lavatories, and the other three are without; they seat 125 and 128 passengers respectively, the entire train seating 759.

The current supply is 11,000 V. a.c., passed through transformers and Ignitron rectifiers to the d.c. traction motors, each of 100 h.p. As all the axles are motorised, each coach can command 400 h.p., and the six-coach train a total of 2,400 h.p., enough to accelerate it to 90 m.p.h. on level track. The motors

are connected in series for starting and low-speed working, but change to series-parallel operation at the higher speeds; acceleration is controlled automatically by timing relays.

The motor coaches, carried on Budd bogies, which are of a unique light-weight type, weigh 40 tons apiece, and those with bogies of General Steel Castings design 42 tons; but 8 tons of this weight is that of the air conditioning plant.

ARGENTINA

Diesel Locomotive Deliveries

The State Railways have announced that during the first six months of 1958, 155 diesel-electric locomotives were received from different sources. The delivery of 130 Alco and five Alsthom units, completed the orders outstanding with these companies. In the second six months, 50 General Electric and five English Electric locomotives will be delivered, and in 1959, 50 more will be received from Cockerill and 16 from English Electric.

FRANCE

Conversion to Single Track

The Valence-Moirans (-Grenoble) line of the Mediterranean Region was, until recently, double-track throughout its 49 route-miles. On the Romans-Moirans section, 36 miles, one track was of long-welded rails on concrete sleepers, whilst the other, of older material, became due for renewal in

1957. Taking into account the traffic potential and modern operating methods, it was decided to remove the older track rather than renew it, and this work has now been completed without prejudice to traffic. Improved visibility on the single track has enabled a number of level-crossing keepers to be dispensed with; the crossings are now controlled by automatic signs and half-gates.

Tail Lights

In accordance with the U.I.C. standardisation arrangements for rear lights on trains, the S.N.C.F. is to modify its present regulations. The present layout of one large and two small lamps will be progressively replaced by two large lamps fixed as specified by the U.I.C. below the body of the last vehicle. On certain lightly trafficked lines, a single large lamp will be allowed.

PORTUGAL

Railway Results for 1957

Working receipts of the Portuguese Railways totalled escudos 776,612,539 in 1957, against esc. 769,963,632 in 1956. The working expenditure and charges, however, amounted to esc. 902,693,993 and esc. 873,206,861 respectively, with a working loss of esc. 126,081,454 for 1957, over 20 per cent more than in the preceding year (esc. 103,243,228). The 1957 accounts closed with an adverse unfavourable balance of esc. 67,204,041, compared with one of esc. 41,252,947 for 1956.

Publications Received

Great Western Steam. By W. A. Tuplin. London: George Allen & Unwin Limited, 40, Museum Street, W.C.1. 8½ in. x 5½ in. 193 pp. Illustrated. Price 25s.—The author suggests in his preface that much written about Great Western Railway engines is misleading in its idolatry, for Swindon exacts from some devotees a homage blind to imperfections. Possibly because interest in the steam locomotive usually starts in infancy, much literature on the subject gives the reader barley sugar instead of the more appropriate coal-dust, soot and ashes. At the stage in railway history when the steam locomotive is—slowly—on its way out, Dr. Tuplin has attempted an objective record of some of the things he believes really matter about it, and chosen the G.W.R. as a peg on which to hang a sketch of the locomotive in conception, in being, and at work. His admiration of that railway over some 45 years is tempered by a practical appreciation of faults. The passenger or lineside observer often has little idea of operation as experienced on the footplate, but Great Western enginemen on the whole have been well satisfied with the locomotives provided for their work. It cannot be

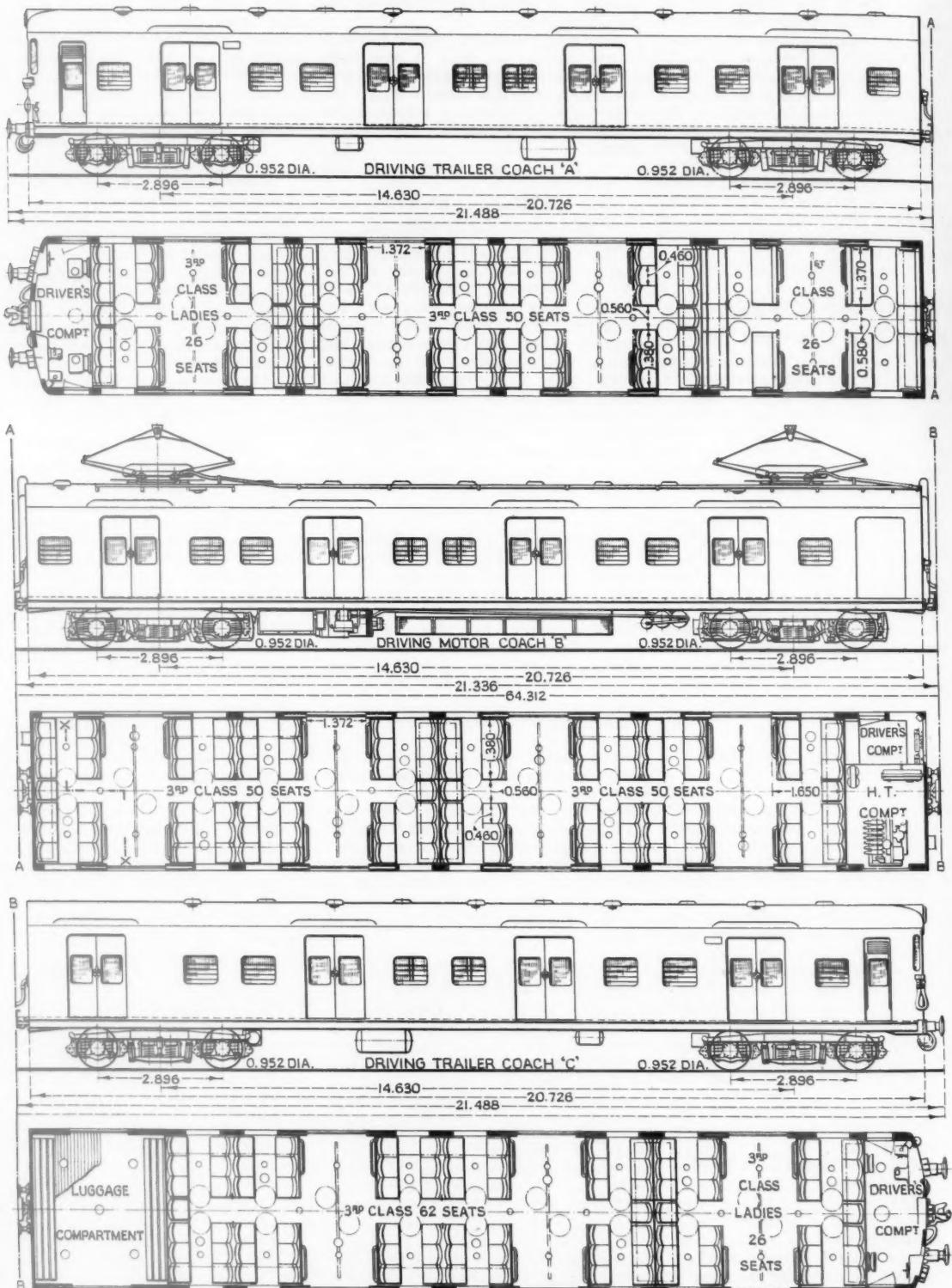
claimed that Swindon methods are perfect, and here the inferior cab comfort of its tender engines is put forward as an example. Other imperfections are examined and improvements suggested in this original and entertaining review. The conclusion, nevertheless, is that Great Western locomotive practice remains a model of its kind, unexcelled at any time or place.

Switzerland's Amazing Railways (Revised Edition). By C. J. Allen. London and Edinburgh: Thomas Nelson & Sons Ltd. 9½ in. x 6 in. 180 pp. Fully illustrated. Price 25s.—The information on the various types of Swiss railway and allied transport (such as *téléphériques* and *gondelbahnen*) is both full and well presented, and cannot fail to interest any railwayman who has visited or intends to visit Switzerland. Even those with a fairly extensive experience of Swiss railways will learn much. The book does not aspire to being a textbook, and makes equally pleasurable reading for the layman with only a slight knowledge of railway matters. The 200 half-tone illustrations—some of them entirely unfamiliar—are well chosen and reproduced; there are some useful maps.

Self-Changing Gears Limited.—A booklet of 24 pages has been produced by Self-Changing Gears Limited, Lythalls Lane, Coventry, dealing briefly with the history of the company. Mention is made of the founder of the company, Major W. G. Wilson, who invented the Wilson "pre-selective" gearbox now widely applied to many semi- and fully-automatic transmission systems including road and rail. Copies may be obtained from the company.

Audio Frequency Cables for Junction and Trunk Working.—Publication JC/1 describes the range of Telcon plastic-insulated multi-conductor audio frequency cables suitable for junction or trunk circuits between exchanges, and so on. The cables are available in forms suitable for laying in trenches, by mole-draining, drawing into ducts or suspension on pole routes. Information on special features, finishes, installation, accessories and cable characteristics is included in the booklet, besides notes on the properties of Telcothene and p.v.c., diagrams, and conversion tables. Copies may be obtained from the Telegraph Construction & Maintenance Co. Ltd., Mercury House, Theobalds Road, London, W.C.1.

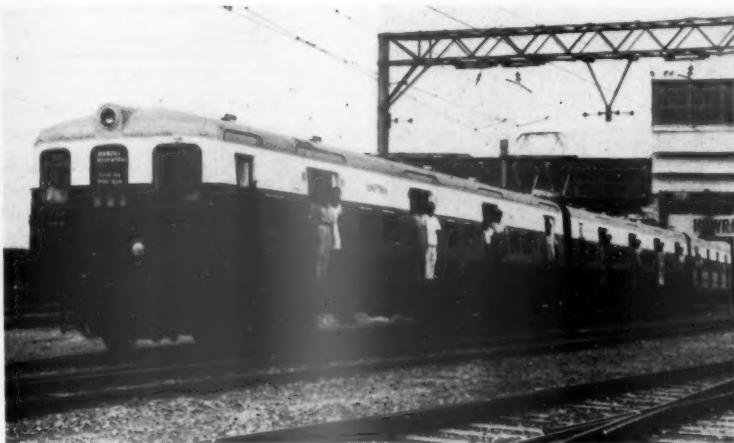
Electric Trains for Calcutta Suburban Services



S.I.G. three-coach unit for Eastern Railway 3,000-V. d.c. electrification showing arrangement of compartments (including ladies') and seating

Electric Trains for Calcutta Suburban Services

Three-car 1,025-h.p. Swiss-built 12-ft. sets for 3,000-V. d.c. broad-gauge lines



Three-coach unit at Howrah Car Shed, Calcutta

A FURTHER step in the Calcutta electrification project was taken recently with the introduction of 16 three-coach trains on the high-tension d.c. electrified suburban lines. This stock, along with one spare motor-coach, was supplied by the Swiss Industrial Company (S.I.G.), of Neuhausen Rhine Falls, on behalf of the Export Association of Swiss Railway Equipment Manufacturers, consisting of S.I.G.; Schindler Carriage & Wagon Co. Ltd., Pratteln; Swiss Car and Elevator Manufacturing Corp. Ltd., Schlieren; Aircraft & Vehicle Works Inc., Altenrhein; Brown, Boveri & Co. Ltd., Baden; Oerlikon Engineering Co., Zurich; and Sécheron Works Co., Geneva.

Of the complete order, S.I.G. built all the motor-coaches, Schindler all the A-type trailers, and Schlieren all the C-type trailers (see accompanying diagram). The Altenrhein works supplied all the doors. The electrical equipment has been built by the three makers Brown, Boveri & Co. Ltd., Oerlikon Engineering Co., and Sécheron Works Co.

As shown on the general layout, a three-coach unit is composed of one motor-coach flanked by one control trailer on each side. A control trailer of type A/DT contains, besides the driver's compartment, two third class compartments seating 26 and 50 passengers respectively and one first class compartment seating 26. In the motor-coach, B/MC, there are two third class compartments seating 50 each, one h.t. compartment, and one auxiliary driver's cab for marshalling in yards and repair shops. A control trailer of model C/DT contains one driver's cab, two third class compartments seating 62 and 26 respectively, and a compartment for 4 tons of

luggage. The trains are operated as three-coach units, with the possibility of combining up to three units into one train of nine coaches in multiple, and acceleration is 1·2 m.p.h.p.s. up to 25 m.p.h. In addition, the characteristics of the traction equipment, the layout of the control system as well as the type and arrangement of electric and mechanical couplers at the ends of the trains, enable running in multiple control with similar train units of English and German manufacture.

Mechanical Portion

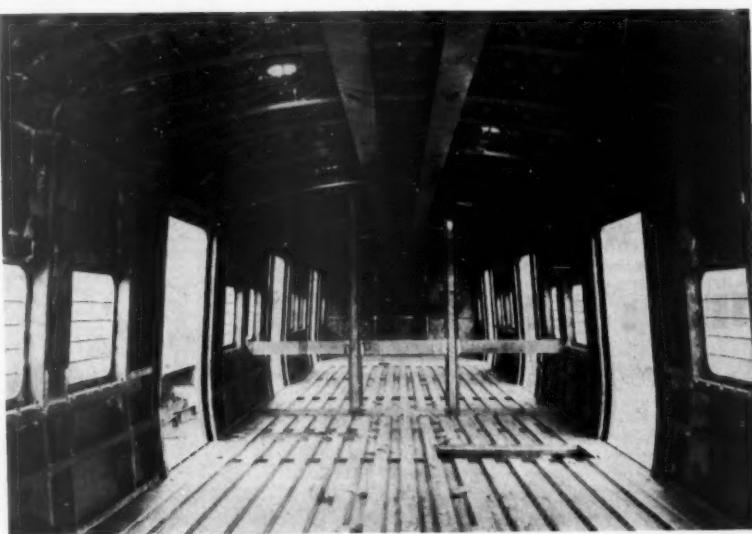
To obtain the greatest strength and rigidity an all-welded stressed-skin construction was adopted for all vehicles, using pressed and bent sections for the

framework, and with the 0·2 per cent copper-bearing 2·6-mm. side panel plates welded to frame members. A buffing load of 100 tons was specified as the end load to be carried. Sides, ends and roof are sprayed with asbestos insulation. The corrugated sheet steel floor is covered with cork surmounted by Ferrozell. Inner side panels, ceilings and partitions, and the semi-bulkheads near the sliding doors, are lined with durable fibre-wood boards impregnated against fire and against termites. Along the centre of the ceiling and roof is run the cable conduit, and on either side of this are several ventilating fans with individual operation and control mechanism. The main lighting circuit in each coach is supplemented by an emergency circuit having two to four lamps in each saloon fed direct by the storage battery. A three-hour feed to this emergency circuit is possible should there be a failure of the motor-generator set catering for the normal lighting.

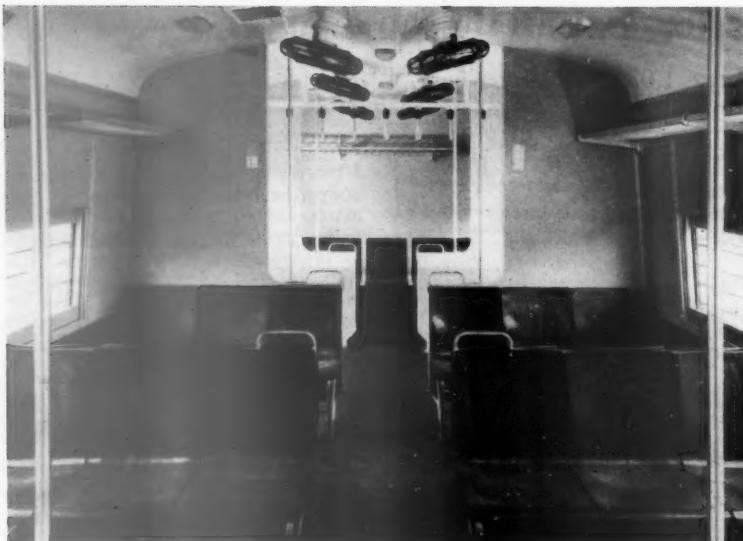
Sectional Construction

Each side window set is a sub-assembly consisting of a light-alloy frame in which the two shutters, viz. a light-alloy louvre and a glass shutter, are guided. Both shutters open upwards, and are fully equalised by SIG-type equalisers which keep them stable in any position. When entirely closed, louvre and glass shutters can be locked from inside. All window frameworks and the mouldings for the ceiling and wall linings, are of light-alloy sections.

Seating in the third class saloons comprises seat and backrest boards pressed in one piece from impregnated



Body of type B/MC motor coach, showing fully integral tubular design



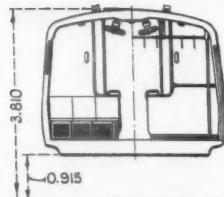
Interior of third class compartment in type B/MC motor coach showing seating arrangement and fans

plywood, and riveted to a frame welded up of steel tubing. The same kind of framework is used for the first class seats, but these are upholstered in foam rubber lined with white cloth and artificial leather. An emergency alarm is fitted in each saloon, and is operated by pulling a leather loop. A pull wire connected to the release mechanism operates a signalling device outside at the end of the coach and rings bells in each driving cabin until the signalling device has been reset. An English Steel Corporation Majex automatic centre coupler at each end of the train permits the coupling of two or three triple-car sets in multiple. Alliance inter-coach centre couplers connect the three coaches of one train set. Standard side buffers are provided at the outer ends of a three-car set for use against station buffers and other vehicles.

The bogies are of the well-known Swiss type, with cylindrical axlebox guides. The frames are of welded pressed and formed sections. Each bogie carries its proportion of the superstructure weight on two side supports carried on the bogie bolster; and apart from pivoting the bogie pivot transmits only the horizontal traction and braking forces. The bolsters are connected to the bogie frame through helical springs and swing links. In the longitudinal direction the bolsters of the trailer bogies are guided without play by two anchor links, whereas in the driving bogies this guiding is effected by friction plates between bolster and bogie transoms. Axlebox suspension consists of one pair of helical springs on each side of the axlebox; and inside these springs are the cylindrical guides and the hydraulic shock absorbers. All axleboxes are of SKF self-aligning pattern. A motor coach bogie weighs about 6½ tons without traction motors.

Braking is by the Westinghouse com-

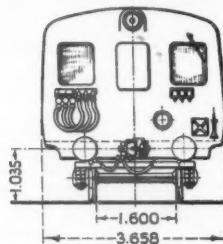
bined self-lapping electro-pneumatic and automatic system, with equipment obtained from England. Each bogie has its own brake apparatus consisting of an automatic brake unit with pressure-indication switch and release valve. Each motor bogie has an 8-in. dia. cylinder for each wheel, and a trailer bogie one cylinder for each wheel pair. All these cylinders have built-in automatic slack adjusters. An



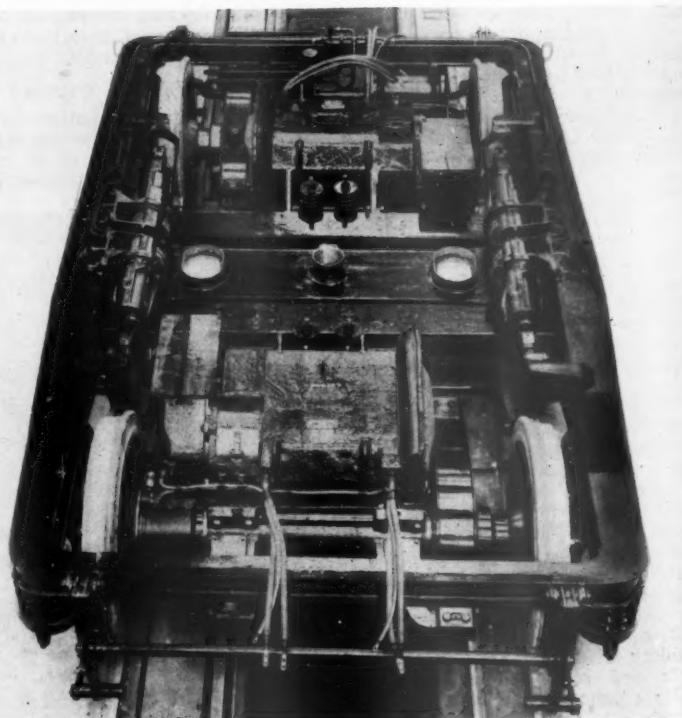
*SECTION X.X.
Cross section of driving
motor coach "B"*

Oerlikon compressor furnishes the air supply for the brakes. The handbrake in the driver's cab acts only on the adjacent bogie.

Each driver's cab is separated from the passenger portion of the train, and can be approached only through a hinged side door. Cabs of the control trailers are fitted for driving either seated or standing, and all the functional equipment—master controller, control



*Front elevation of driving
trailer coach*



Driving bogie with type TM 500 nose-suspended traction motors

switches, instruments, and signal lamps—is grouped in a control panel on the left-hand side; and the driving window is equipped with an air-operated wind-screen wiper. There is an auxiliary driving cabin located in the centre motor-coach, but this is for emergency and shunting use only.

Electrical Equipment

A cardinal point in the design was that to ensure long intervals between overhauls, and trifling maintenance attention between-whiles, all the electrical apparatus was to well-proved design and of robust and ample construction; and special care was given to the protective devices to ensure absolute safety in service.

The electrical equipment comprises four traction motors with an individual one-hour rating of 260 h.p. (210 h.p. continuous), which are mounted in pairs in the two bogies of the motor-coach. The two motors of each bogie are connected permanently in series. During the start, ribbon resistances are put in series with the motors and short-circuited step by step by means of electro-pneumatic contactors. Reduction gears are of non-silent type, and the nose-suspension springs are of steel coil form.

A high-speed circuit-breaker protects the h.t. circuits against shorts. It is designed for quick and powerful operation and cuts currents of 10,000 amp. and more at a tension of 3,600 volts in less than 0.02 sec. In case of atmospheric over-voltage, lightning arresters of high capacity deviate the discharge to earth. Overload relays protect the traction motors and the 3,000-volt motor of the motor-generator set against overload. If the voltage should fail on the overhead line, a no-current relay disconnects the main power circuits so that the sudden come-back of the voltage cannot damage the traction motors. A deadman device, with 2-sec. delay, combined with the handle

of the master controller, trips the main power circuit and makes an emergency application of the air brakes in case of disability of the driver. Most of the high-voltage equipment is located in a special h.t. compartment locked with the earthing switch so that it cannot be entered until the h.t. circuits are connected to earth. In reverse, the earthing switch cannot be opened before the door of the h.t. compartment is closed. This h.t. compartment is located on the right-hand side of the motor-coach adjoining the auxiliary driver's cab, and is accessible from there through a safety door. A detachable side panel locked from the inside enables easy mounting and dismantling of the electrical equipment.

All auxiliary and control circuits are at a constant tension of 110 volts supplied by the generator of the motor-generator set. The output voltage is kept constant by means of a voltage regulator. The alkaline battery is designed for a nominal discharge tension of 110 volts, so that the low-voltage circuits work always at the same voltage, whether the motor-generator set is running or not. A booster connected in series with the generator provides the charging of the battery at a voltage of up to 150 volts. A two-stage reciprocating motor-compressor set with a capacity of 35 cub. ft. per min. of free air supplies the necessary compressed air at a pressure of 100 lb. per sq. in. for the e.p. brake system and the pneumatic apparatus of the electrical equipment.

The main part of the control equipment is the automatic starting device. The operating of the starting contactors is controlled by a servo-controller. On his master controller the driver only chooses the position to be finally reached, namely series or parallel combination of the traction motor groups, or field weakening in parallel combination. Then the servo-controller moves step by step up to the corre-

sponding position, and its progression is controlled by a current-limit relay providing regular tractive effort during acceleration. Any reverse movement of the handle brings the whole control gear back to the zero point. Two steps of motor field-weakening are provided, viz. 20 and 32 per cent. There are 11 traction notches in the series grouping and 9 in parallel grouping. Air-operated control switches in the control supply ascertain that the air pressure for the brakes and the electro-pneumatic equipment are always high enough during service. A set of signal lamps located on the driving desk indicates to the driver the correct working of the equipment.

Due care has been given in the arrangement of the electric equipment in order to allow easy checking of all apparatus. The contactors, reverser, motor cut-out switch and relays are located on a frame in the middle of the h.t. compartment so that they are all easily accessible. Most of the low-voltage equipment of the motor-coach is arranged in a clear manner on the low-voltage panel in the back of the auxiliary driver's cab. Two pantographs with copper wearing strips are mounted on the motor coach.

MAIN TECHNICAL DATA, SWISS-BUILT ELECTRIC TRAINS FOR CALCUTTA

Nominal line voltage	2,900 d.c.
One-hour rating (at the wheel rim)	1,025 b.h.p.
Corresponding speed (full field and parallel grouping of traction motor groups)	29 m.p.h.
Corresponding tractive effort	13,200 lb.
Average starting tractive effort limited to	20,500 lb.
Maximum speed	65 m.p.h.
Motor gear ratio	21 : 65
Gauge	5 ft. 6 in.
Width over body	12 ft.
Overall height (rail to top of body)	12 ft. 6 in.
Length over buffers	211 ft.
Distance between bogie centres	48 ft.
Wheel base of bogies	9 ft. 6 in.
Wheel diameter	37½ in.
Tare: three-coach unit	113 tons
motor-coach	51 "
trailer coaches (2)	62 "
Seating capacity: 1st class	26
3rd class	264
Standing passengers, approx.	290
Official crush load, capacity	580
Capacity of luggage room	4 tons

Diesel Motive Power in Eastern Region



Outside the new diesel maintenance depot at Stratford, Eastern Region: (left to right) Brush 1,250-h.p. Type "2." English Electric 2,000-h.p. Type "4" and North British 800-h.p. Type "1"

Rolling Stock for L.T.E. Metropolitan Line

Proposed design for Amersham, Chesham and Watford services



Probable appearance of centre bay of the coaches shown by wooden mock-up of the provisional design

THE London Transport Executive has prepared provisional designs for the new multi-unit trains to be ordered for the Metropolitan Line services to Amersham, Chesham and Watford. The stock is expected to enter service in 1961, replacing the present electric and steam hauled compartment stock; the cost will be more than £5,000,000.

Each train will consist of four driving motor and four trailer cars, and will have a length of 431 ft. 6 in. over couplers. The eight cars will be arranged in two units each consisting of a driving motor car, two intermediate trailers and another driving motor car. Auto-couplers will be fitted at the outer ends of each four-car unit.

The driving motor cars, which are 53 ft. 2 in. over body ends, will have a driver's cab at one end and a guard's compartment at the other, occupying 4 ft. and 5 ft. $\frac{1}{2}$ in. respectively. The

guard's compartment will be fitted with single sliding doors on each side. These give a 2-ft. 3-in. opening and will be available for the use of passengers when the compartment is not occupied by the guard.

Driving Motor Cars

The main body space of the driving motor cars is divided into three bays of seats, separated by two 5-ft. $1\frac{1}{2}$ -in. vestibules, each with double sliding doors on each side of the car. The doors give a clear opening of 4 ft. 6 in. The passenger bays have glazed screens above the backs of the seats next to the vestibule. The screens form part of a partition which is carried across the upper part of the car to give a semi-compartment effect to each passenger bay. The bay next to the guard's compartment is 12 ft. in length and has four seats, each holding three passengers, in two facing pairs, on one

side of the gangway, and four double seats, similarly arranged, on the other. The centre bay is identical.

The bay behind the driver's cab is 9 ft. 9 in. in length and has one pair of double seats on one side of the gangway and a pair of seats for three on the other. There are also double seats on each side of the gangway with their backs to the bulkhead between the passenger space and the driver's cab. Each driving motor car has 54 seats in all.

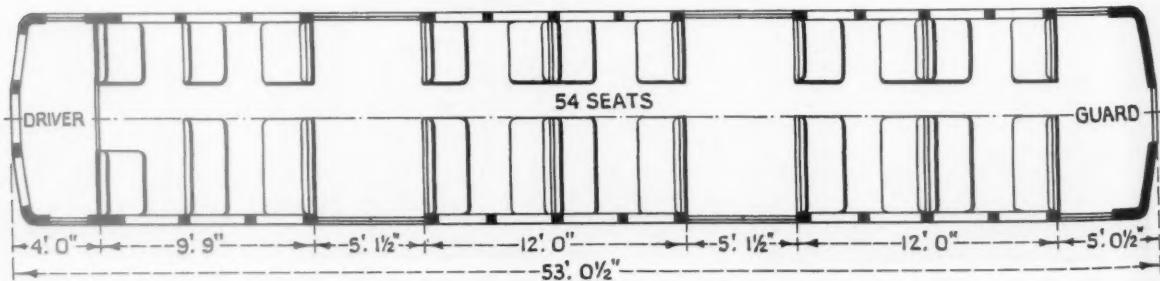
Trailer Cars

The trailer cars are also 53 ft. $\frac{1}{2}$ in. in length over body ends. They have three pairs of double sliding doors on each side and three vestibules, dividing the cars into four semi-compartments. On each side of the centre vestibule are 12-ft. passenger bays with seating similar to that in the 12-ft. bays of the driving motor cars. At both ends of the trailer cars are 6-ft. 10-in. semi-compartments containing a seat for three facing a double seat with its back to the end wall of the car. On the other side of the gangway are two double facing seats. The total seating capacity of the trailer cars is 58. The arrangement of the seating for the driving cars, which is similar to trailers, is seen in the accompanying diagram.

The seats have higher backs than are normally provided with this type of transverse seat in London Transport rolling stock, and a grab handle is fitted at the gangway end at each seat back. There are no armrests between seats, but the side panels of the car have arm recesses at the outer end of each seat, except at casement positions where space is required for the sliding door to enter its pocket. The accompanying illustrations show the probable intended arrangement of the coaches.

Short racks for light parcels, alternating with advertisement display panels, are provided down the side of the car, the parcel racks being positioned longitudinally above the window seats. Quadrant-type ventilators are to be fitted.

The main lighting will be by two parallel rows of 4-ft. fluorescent tubes
(Continued on page 280)



Typical seating arrangement for stock to be ordered for L.T.E. Metropolitan Line

British Transport Commission Archive Organisation

Administration of the Historical Records Department

WITH the formation of the British Transport Commission in 1948, a large collection of relics and records passed into its possession which both the Commission and, in the case of the nationalised railways, the former railway companies were anxious should be carefully preserved. It was therefore agreed that the creation of the Commission presented a good opportunity for the formation of a comprehensive transport collection, of which a substantial nucleus was already available.

A committee under the chairmanship of Mr. S. B. Taylor, then Deputy Secretary, and now Chief Secretary of the B.T.C., was formed to examine the question of preservation of the records and relics.

In its report published in 1951 it recommended the establishment of a department for the preservation of historical relics, under a curator, and another for that of historical records, in charge of an archivist. In general, where the main interest of an object derives from its form and substance it is considered to be a relic, and where the main interest attaches to the inscribed matter it is classified as a record. There are border-line cases, but agreement is reached between the curator and the archivist as to who should take custody of such items, and, where there is mutual interest, appropriate information is recorded in both departments.

Formation of Department

The Historical Records Department of the British Transport Commission was established in July, 1951, and the business of record preservation was started in a positive and organised fashion. The books and documents to be dealt with were those of companies and undertakings of which the activities in the sphere of transport were recorded from the late 18th, the 19th, and the early 20th centuries.

The reasons for preservation are two-fold—utilitarian and historical. Certain factual information has a perpetual value for current day-to-day work, such as legal questions relating to property ownership, and one of the Department's functions is to supply information from its records to various branches of the national transport undertaking. Although the antiquarian interest has its own values and sentiments, it is by no means the main feature of the historical aspect. Students of social, economic, and transport history; writers of theses; and authors and research workers of many kinds use the records extensively.

The undertakings which in 1948 came under the control of the British Transport Commission directly or by way of earlier amalgamations include navigation and canal, port, harbour, and dock undertakings, road transport concerns, railway companies and cer-



Research room at the London historical records repository of the British Transport Commission showing archive registers and part of the library

tain other concerns. The methods of record-keeping for these various bodies vary, and frequently individual companies have altered their own systems during the years. It is necessary, therefore, that the system of classification used to compile these records into one collection of B.T.C. archives should be flexible while conforming to certain main principles. Moreover, besides archives as such, the Department's terms of reference include a library of books on transport and allied subjects, chiefly of comparatively rare and early works, with periodical publications bearing upon transport. Government reports, returns, and so on are also included.

Classification

It was decided from the start that to conform to archive principles it was necessary to preserve, as far as possible, the identity of each company's records. Company identity must always be given pre-eminence and records should not be grouped under subject matter. The administrative body which originally created and used the document is therefore the standard of appraisal.

Cases arise, however, where this company principle cannot always be followed. Many companies kept and bound together prospectuses or reports and accounts of other companies. These composite volumes have their own archival interest, which should not be destroyed; they are the property of a particular company, and to break

up the component parts to file with the individual companies to which they relate would be incorrect. Special groups are therefore provided in such cases where the document is of a subject rather than a specific company nature.

Of the main types of record so far taken into custody by the Historical Records Department, the company groups include 912 railway administrations, including 111 joint committees; 110 London Transport undertakings; 99 navigation, canal, harbour, and dock undertakings; 200 road transport firms; various other companies; hotels; and the railway clearing house.

The documents relating to these groups are divided into classes, many of them common to each group. They are minutes of meetings and reports; registers relating to capital structure; historical deeds, contracts, estimates, and plans; locomotive and rolling stock records; memorials to directors; correspondence; and accountancy records. Other records, not common to all companies, are provided for by separate classes within the company group.

Records in the miscellaneous group are classified according to their subject matter and include company documents such as by-laws, prospectuses, press notices, and timetables; Government reports and returns; maps, plans, and surveys; the library, with 24 subdivisions by subjects, including the proceeding of professional institutions; shareholders guides and manuals; 83

classes of periodical publications; parliamentary records; and special collections which include letters, papers, timetables, books, and other material donated to the B.T.C.

Filing

To give a broad outline of the records held, loose-leaf ledgers show in summary form the documents relating to each company or subject. The leaves are arranged in the alphabetical order of the companies or subjects, separate sections being provided for railways, canals, docks, and so on. A short constitutional history of each company has been written showing its inception and evolution from the first act of incorporation until amalgamation with some other company or absorption into the B.T.C., and this is filed as the first page of each company's summary.

In another set of registers, termed location registers, loose leaves are filed in the alphabetical order of the group letters showing each individual document, its date range, and filing location. All items are also subject indexed on cards in as comprehensive a way as possible. No filing locations are shown on the cards, so that in the event of a change, only the location register needs to be amended.

Of the various types of documents which have passed to the Department, minute books, of which there are some 12,000, are among the most important. These are not open for research until

they are more than 50 years old. Minute books record the development of the undertakings, and in doing so often reflect in some measure fluctuations in the trade and industry of the areas they serve. The oldest set of minute books in the Department's possession, those of the Aire & Calder Navigation Company, form a practically complete set from 1699 to 1947.

The registers and subscription contracts relating to capital structure deal with various aspects of the finances of the administration, mainly relating to shareholdings, issues and redemptions of capital, and dividend payments. Though by no means complete, they give useful illustrations of the source and extent of capital raised for transport. The department does not take title deeds and conveyances, but certain historical deeds, and contracts for the building of railways with estimates and plans, are passed into its custody.

Out of a considerable volume of correspondence dating from the late 18th century, a valuable collection is being made of letters from persons whose names have acquired world-wide significance, and of less known men giving important information about the early detailed working of canals and railways.

The library, comprising some 3,500 volumes, contains some of the earliest works on various aspects of transport. There are 24 classes within this group, and separate from it there is a group

of 83 periodicals. Every year from 1838 onwards is covered by a publication such as the *Railway Times*, *Hera-path's Railway Journal* and so on. There is also included a series of *Illustrated London News* from the first issue in 1842 to 1903 with only a few copies missing, and many other periodicals having a direct or indirect bearing upon transport.

A branch of the Department in York deals with records covering the north-eastern area of England, and another in Edinburgh takes Scottish records. The system of registration is arranged so that the records at these branches, though shown in separate registers at the branches, also form part of one comprehensive register, a copy of which is also kept at each branch. At the head office in London, besides the comprehensive register, separate registers are maintained showing the records at each branch. This involves some additional book-keeping, but is considered necessary if all the staff are to be aware of the material held.

The London repository is at 66, Porchester Road, W.2. It is a large reinforced concrete building with floors strengthened to bear the weight of material. The structure of the building affords protection against damage by fire.

The work of the department is under the direction of Mr. L. C. Johnson, Archivist of the British Transport Commission.

Rolling Stock for L.T.E. Metropolitan Line

(Concluded from page 278)

arranged down the centre of the roof of each car. The partitions between bays and vestibules will carry an incandescent emergency light in the centre. This will have a rectangular diffused glass cover on both sides and thus serve to light both passenger compartment and vestibule. Below the light fittings, the partitions will carry a route diagram of the Metropolitan Line.

Occasional tip-up seats may be fitted in the guard's compartment for use by passengers when such compartments are not being used by the guard. Hand-grips of standard pattern will be fitted on both sides of the vestibules and on the two-passenger seat side of the gangways. End doors are provided for emergency communication between cars as in the majority of London Transport railway rolling stock.

The new Metropolitan Line rolling stock is to have unpainted aluminium alloy bodies, brought out at solebar level to the full permissible width of 9 ft. 8 in. and rising to waist level before the "tumblehome" of the sides commences. The cars will have bogies fitted with rubber suspension.

Two prototype motor bogies for the new stock are now under construction at the L.T.E. Acton Works. When completed, they will be tested extensively in

service. The design of the new cars is not yet final, except as regards seating arrangements, and may be amended before orders are placed.

The new Metropolitan Line stock is being designed at the Acton Works under the direction of Mr. A. W. Manser, Chief Mechanical Engineer (Railways).

FARNBOROUGH AIR DISPLAY.—For the Society of British Aircraft Constructors Flying Display and Exhibition at Farnborough on September 5, 6, and 7, the Southern Region of British Railways will issue cheap tickets from London and many other stations to Farnborough and Aldershot. The Aldershot & District Traction Co. Ltd. will operate a service of buses from Aldershot and North Camp Stations to the airfield. There will be special combined rail and road tickets at low fares.

B.T.C. STAND AT KINGS LYNN CHAMBER OF TRADE EXHIBITION.—The British Transport Commission stand at the recent Kings Lynn Chamber of Trade Exhibition featured the dock and rail facilities at Kings Lynn, and included models, photographs and colour transparencies. The main feature of the stand was a model of Kings Lynn docks, behind which was mounted an enlarged photograph of the Alexandra Dock, Kings Lynn, as it appeared in 1883. A series of tinted photographs and a transparency unit showed many of the day to day activities at the docks and on the railway at Kings Lynn.

One part of the stand was devoted to information regarding British Railways goods and passenger services.

WITHDRAWAL OF PASSENGER SERVICE BETWEEN LEAMINGTON AND WEEDON.—British Railways, London Midland Region, has announced that the passenger train service between Leamington Spa and Weedon will be permanently withdrawn from September 15. The stations affected are Weedon, Daventry, Braunston London Road, Napton & Stockton, and Southam & Long Itchington. Bus and passenger train merchandise for Weedon, Daventry, and Braunton will be dealt with at Northampton and for Napton & Stockton and for Southam & Long Itchington at Rugby.

COUNTY DONEGAL LINE TO CLOSE.—The Donegal-Ballyshannon line of the County Donegal Joint Committee is to be closed, after roads in the area have been improved for the operation of regular transport services. The proposal to terminate the rail service and substitute road transport was made by the C.D.J.C. The tribunal set up by the Republic of Ireland Minister for Industry & Commerce to inquire into the proposal has accepted the Joint Committee recommendation. The Minister has also made an order authorising the Sligo, Leitrim & Northern Counties Railway Company, which is in liquidation, to abandon the section of its railway line in the Republic. Train services over the S.L.N.C.R. were terminated on September 30, 1957, as a consequence of the closing of the G.N.R. line which served Enniskillen.

RAILWAY NEWS SECTION

PERSONAL

Mr. T. C. Courtney, Chairman, Coras Iompair Eireann, has resigned. He has been succeeded by Dr. C. S. Andrews, Managing Director of Bord na Mona (Turf Board). Mr. Courtney has been made a part-time member of the new Board of C.I.E. Dr. Andrews took up his new appointment on September 1. C.I.E. takes over the G.N.R.(I) on October 1.

adoes. In 1941 he was transferred to the Trinidad Government Railways as Executive Engineer. He was appointed Maintenance Engineer in 1943 and Operating Superintendent in 1944. He became General Manager on July 1, 1944. During his term of office the road services were expanded and co-ordinated with the railway. In April, 1949, Mr. Perkins assumed the duties of General Manager, Transport & Harbours Department, British Guiana.

Mr. J. E. A. Foreman, M.Inst.T., Traffic Manager, Malayan Railway, who, as recorded in our June 20 issue has retired, was educated at Emanuel and Westminster City Schools, London. Mr. Foreman began his career with the former Great Western Railway in 1924 and gained experience at goods stations in the London area. In April, 1941, after a period of special training, he was appointed Junior Assistant to the District Goods Manager,



Mr. W. T. P. Perkins

General Manager, Sierra Leone Government Railway, 1955-58



Mr. J. E. Foreman

Traffic Manager, Malayan Railway, 1956-58

Mr. W. T. P. Perkins, General Manager, Sierra Leone Government Railway, who, as recorded in our June 13 issue, has retired, was born in 1904. He joined the engineering staff of the Barry Railway, Barry Docks, South Wales, in 1922, and transferred to the Great Western Railway on amalgamation in the same year. Four years later he became Assistant to the Resident Engineer, Penarth Docks, and was transferred to the Newport Division in 1927. In 1928 he was seconded to the Jamaica Government Railway under the "Ormsby-Gore Scheme" and elected to remain in the Colonial Service. He was appointed District Engineer in charge of the Port Antonio Line and took charge of the Montego Bay Line in 1929. Mr. Perkins was transferred to the Public Works Department, Kingston, Jamaica, on March 1, 1938, as Assistant Engineer and two years later was appointed Acting Inspecting Engineer, Eastern District. In 1940 he took charge of the construction of the Fleet Air Arm Station at the Palis-

Three years later he was appointed Chief Engineer, Nigerian Railway and, in March, 1955, took up the office of General Manager, Sierra Leone Government Railway.

Mr. S. L. Smith, Assistant to District Operating Superintendent, Glasgow South, British Railways, Scottish Region, since December 1956, has been seconded to the Jamaican Government Railways as Traffic Manager, with headquarters at Kingston.

Mr. S. C. Townroe has been appointed District Motive Power Superintendent, Eastleigh, British Railways Southern Region, with effect from August 11, 1958. He succeeds the late Mr. G. M. Thompson.

Mr. R. M. Maitland, Assistant in the Glasgow Office, Scottish Region, British Transport Commission, has been appointed Assistant to the District Traffic Superintendent (Sales), York, North Eastern Region, British Railways.

Bristol. He was seconded to the Railway Companies Association Planning Commission in 1942, and subsequently assisted in planning duties at the General Manager's Emergency Headquarters at Beenham Grange. He was appointed Assistant Goods Agent, Avonmouth, in November, 1945, from which position he resigned to become Port Manager, Port Swettenham, Malayan Railway, in March, 1947. Mr. Foreman became Assistant Traffic Manager (Operating), shortly before the outbreak of the Emergency in 1948, and subsequently served as Staff Officer, Assistant Traffic Manager (Commercial), and Acting Traffic Manager. He became Traffic Manager in June, 1956.

Mr. R. E. Lawler, District Commercial Officer, Ipswich, British Railways, Eastern Region, has retired.

Mr. Victor J. M. de Blieck has been appointed Resident Manager, Europe, General Railway Signal Company of

America. Mr. de Blieck was Technical Manager, Spoorweg Sein Industries, and was formerly with the Signal Department, Netherlands Railways.

Mr. K. Sadagopan, M.A., I.R.A.S., who, as recorded in our June 27 issue, has retired as Chief Administrative Officer, Integral Coach Factory, Perambur, Madras, joined the South Indian Railway Company as a probationary officer in the Accounts Department in 1926. After three years training in the various branches of the Railway Accounts Department and having

factory in India and for the establishment of production of the integral type of coach in this factory. On the satisfactory conclusion of this revised agreement Mr. Sadagopan took charge of the factory organisation at Perambur, Madras, and was appointed Chief Administrative Officer, Integral Coach Factory in July, 1953.

Mr. Herbert Greig, Assistant to Chief Commercial Manager (Modernisation & Productivity), British Railways, Scottish Region, has retired after 50 years' railway service.

Mr. K. Swarup, who, as recorded in our June 6 issue, has been appointed Chief Administrative Officer & Chief Mechanical Engineer, Indian Railways Integral Coach Factory, Perambur, Madras, was born in 1910. He graduated in Science from Agra University, and joined the former East Indian Railway as a Special Class Apprentice in 1929. After training at Jamalpur, Mr. Swarup was sent to England for further training on British Railways for two years. He was then appointed an Assistant Mechanical Engineer, East Indian Railways in 1935. He



Mr. K. Sadagopan

Chief Administrative Officer, Integral Coach Factory, Perambur, India, 1953-58



Mr. K. Swarup

Appointed Chief Administrative Officer, Integral Coach Factory, Perambur

completed the professional Accounts tests, Mr. Sadagopan began work as an officer in the Accounts Department in 1929. He was promoted to be a Senior Accounts Officer in 1938, and, in 1944, he was made Deputy by the Government of India as Financial Chief Accounts Officer. He was appointed Advisor & Chief Accounts Officer of the South Indian Railway on January 1, 1946. In March, 1949, Mr. Sadagopan was appointed Director of Finance in the Railway Board. During his term of office he also officiated for a short period as the Financial Commissioner for Railways. In 1951, he became Financial Adviser to Mr. F. C. Badhwar, the Chairman of the Railway Board, upon the latter's visit to Europe in connection with the programme for procurement of rolling stock for the Indian Railways. In March, 1953, Mr. Sadagopan was sent to Switzerland to negotiate revision of the technical aid agreement, entered into in 1949 with the Swiss Car & Elevator Manufacturing Corporation, Schlieren-Zurich, for the construction of a coach

Mr. J. Edwards, Passenger Traffic Representative, Liverpool, Canadian National Railways, has retired.

London Midland Region, British Railways, announces the following appointments:—

Mr. G. J. Aston to be Line Traffic Officer (Operating), Derby.

Mr. W. O. Reynolds, to be Assistant Operating Officer, Euston.

Mr. N. Thornley, to be Assistant (Works Contracts), Supplies & Contracts, Manager's Office, Euston.

Mr. D. R. Barnacle, to be Assistant Line Traffic Officer (Motive Power), Crewe.

Mr. P. C. Cooper, to be Assistant Line Traffic Officer (Motive Power), Derby.

Mr. A. J. Perry, to be Assistant to Commercial Officer (Passenger General) Euston.

Mr. E. R. Dunnett, to be Assistant to Commercial Officer (Freight Rates & Charges), Euston.

Mr. F. J. Burge, to be District Operating Superintendent, Rugby.

held several appointments before joining the Indian Army in 1939. Mr. Swarup was awarded the M.B.E. in 1943. He later rejoined the East Indian Railway in the Lillooah Shops and in 1947, became Works Manager, Carriage & Wagon Shops. In 1951, he was selected to go to U.S.A. and Canada to specialise in Production Engineering. He was appointed Deputy Chief Mechanical Engineer in 1952 and, in 1953, he was transferred to the Integral Coach Factory, Perambur, Madras. Mr. Swarup was sent to Switzerland for four months in 1953 to study the construction of lightweight all-welded steel coaches and also to assist in obtaining machinery and plant required for the Integral Coach Factory. On the retirement of the permanent Chief Administrative Officer, Mr. K. Sadagopan, in March last, Mr. Swarup took charge in addition to his own duties.

Mr. R. W. Cavin, East African Railways & Harbours, has been elected a graduate of the Institution of Civil Engineers.

*Mr. W. R. Smith*

Staff Assistant, Mechanical & Electrical and Carriage & Wagon Engineers, Doncaster, 1953-55

*Mr. C. A. Browne*

Telecommunications Officer, Western Region, 1955-58

*Mr. L. F. Leonhardt*

General Passenger Agent, London, Canadian Pacific Railway, who has retired

Mr. W. R. Smith, Staff Assistant to the Mechanical & Electrical and Carriage & Wagon Engineers, Doncaster, who, as recorded in our August 1 issue, has retired, entered the service of the Great Eastern Railway in 1911 as a junior clerk in the Hotels Department at Liverpool Street Station. He was transferred to the Electrical Engineer's Head office in 1914 and, after four years' war service with the 56th (London) Divisional Signal Company, Royal Engineers, he returned to that office in 1919. In May, 1928, he was appointed to the headquarters office of the Chief Mechanical Engineer, London & North Eastern Railway, Kings Cross, and, with the exception of two years spent in the staff section of the Mechanical Engineer's Office, Stratford, he remained in the staff section, Chief Mechanical Engineer's Department, until the reorganisation in 1950, having removed to Doncaster with that Department in June, 1941. On the formation of the Mechanical & Electrical Department and Carriage & Wagon Department in 1950, Mr. Smith was appointed Senior Staff Clerk (Wages) in the Joint Staff Office covering both Departments. He became Staff Assistant to the Chief Mechanical & Electrical and Carriage & Wagon Engineers, Doncaster, Eastern and North Eastern Regions in March, 1953.

INSTITUTE OF TRANSPORT

The Institute of Transport announces the following awards:—

British Transport Commission Awards

Mr. E. W. Arkle, Director of Traffic Services, London Midland Region, British Railways, for his paper "Railway management."

Mr. S. E. Raymond, Chief Commercial Manager, Scottish Region, British Railways, for his paper "Selling transport, with particular reference to British Railways."

Mr. F. G. Comeskey, Assistant Costing Service, Cardiff, British Transport Commission, for his paper "The pattern of inland transport."

Mr. M. Rourke, B.E.T. Trainee with the North-Western Road Car Co. Ltd., for his paper "The scope and function of

traffic inspection in road passenger transport."

Mr. B. M. Wardell, Stationmaster & Goods Agent, North Eastern Region, British Railways, for his paper "Marshalling yards."

Road Transport (Passenger) Medal

Mr. D. M. Sinclair, General Manager, Birmingham & Midland Motor Omnibus Co. Ltd., for his paper "Relations in industry."

Dock & Harbour Authorities Association Studentship

Mr. B. R. Hellman, Clerical Officer, Port of London Authority, for his paper "Future trends in cargo handling and carrying."

The Institute Graduate Award

Mr. A. J. Allum, Commercial Representative, British Road Services, for his paper "A road over the sea."

"Modern Transport" Award

Mr. T. J. Donovan, Clerical Officer, Road Freight Section, Coras Iompair Eireann, for his paper "Productivity in road freight transport."

Mr. C. A. Browne, Telecommunications Officer, Western Region, British Railways, who, as recorded in our August 8 issue, has retired, joined the Telegraph Department of the former Great Western Railway in November, 1909. He served for four years in France and Belgium with the Royal Engineers in the 1914-18 war. Mr. Browne was appointed Chairman of the Wireless Committee set up by British Railways at the beginning of the 1939-45 war. The functions of this committee were later extended to embrace all railway communications. The appointment was renewed when the railways were nationalised, and he continued in office until his retirement. He was also a member of the Committee set up during the war to deal with the extension of Train Control. He was appointed Telecommunications Officer in 1955. Mr. Browne is an Associate Member of the Institution of Railway Signal Engineers.

Mr. L. F. Leonhardt, General Passenger Agent, Canadian Pacific Railway, London, who as recorded in our July 4 issue, has retired, joined the C.P.R. in

1910 as a junior clerk and became a counter clerk in 1912. From 1914 to 1918 he served with the City of London Yeomanry. Mr. Leonhardt returned to the Passenger Department in January, 1919, and was in charge of Trans-Pacific traffic to Australia and New Zealand. In 1929, he became Tariff Clerk responsible for Round-the-World rates of which he was considered to be an expert. In 1924, he became Chief Clerk, European Passenger Manager's Department, and was appointed Assistant General Passenger Agent in 1937. On January 1, 1955, he was appointed General Passenger Agent.

We regret to record the death on July 11, at the age of 86, of Mr. E. C. Edwards, who retired from the position of Dock Manager at Plymouth in 1932.

Mr. R. J. Harden, General Agent, Passenger Department, Canadian Pacific Railway, who, as recorded in our July 18 issue, has been appointed General Passenger Agent, London, joined the C.P.R. in 1910, as a junior clerk in the Management Department, transferring to the passenger side later that year. On the outbreak of the 1914-18 war he joined the 24th City of London Regiment (The Queens) and was wounded and invalided out in 1916. He returned to the railway that year and was made Chief Booking Clerk in the City office. In 1936, he was promoted to be Passenger Agent there. During the 1939-45 war he served with the Ministry of Supply until his return to the City in August, 1942. In 1946 he moved to London Head Office as General Agent, Passenger Department, the position he now vacates.

Mr. H. O. Burr, Production Manager of the Mill and Fabric Preparation Departments, Dunlop Rubber Co. Ltd., Fort Dunlop, has retired after 48 years of service.

Mr. W. L. Baker, Manager of the Metal Finishing Division of the Pyrene Co. Ltd., has retired after 30 years' service with the company. He will be succeeded by Mr. H. A. Holden.

NEW EQUIPMENT AND PROCESSES



Interchangeable Plugs and Sockets

A RANGE of electrical plugs and sockets, the UK-AN series, has been introduced to meet changing and expanding design requirements. The range is fully interchangeable with American AN or MS series of plugs and sockets, and the design embodies the more desirable attributes of 30 American types in one connector. The accompanying illustration shows a mating pair of UK-AN connectors with flange mountings.

The UK-AN range is designed to the Ministry of Supply specification EL1884 and radio component specification 321. The connectors can withstand a voltage of 5kV. at sea level and 2.5 kV. at an altitude of 70,000 ft. They are pressure-sealed up to 20 lb. per sq. in. with a leakage rate of less than 1cc. per hr. A special hermetically-sealed type is also available.

The connectors have passed humidity tests ranging up to 100 per cent, including conditions producing condensation on equipment. They are also stated to function satisfactorily at working temperatures from -65° C. to +190° C. and to resist

a flame temperature of 1,100° C. for 15 min. while carrying full rated current.

The plug pins and socket inserts are silver plated and may be crimped or soldered as desired. For normal wiring, no accessories are required, the plugs and sockets being waterproofed and sealed inherently.

Although primarily designed for single or open type wiring, multicore cables can be accommodated. In the event of screening requiring electrical continuity, a cable clamping nut and ferrule can be obtained as accessories.

The connectors are manufactured by the Plessey Co. Ltd., and further details may be obtained from the Electrical Connectors Division, Cheney Manor, Swindon, Wilts.

Improved Hydraulic Tube Bending Equipment

MODIFICATIONS have been made to the Staffa hand-operated two-stage hydraulic tube bending machine. These have the effect of increasing the scope of the equipment. For offset bends to be made without bending or displacing the

hydraulic ram, the unit is now fitted with a different type of forming head. Beside the standard series of holes for positioning the end formers to carry our ordinary bends on steam and gas tubes from $\frac{1}{2}$ -2 in. nominal bore, the forming head has been enlarged and modified with another series of holes so that when the end formers are staggered and located in the appropriate position equi-distant from the centre line of the ram, it is possible to produce offset bends.

A chart is included to act as a guide to the operator on this work and shows quickly the angle of bend necessary to obtain the required centres.

Another modification to the end formers produces a progressive "drag" on the tube to ensure that it seats snugly in the bending former groove. This is useful when working on materials where there is a tendency for the tube to leave the die under extreme pressure.

So that bends in various planes can be made without hindrance, and at a convenient operating height, lugs have been fitted to the lid of the metal toolchest. These enable the pump body to be fixed rigidly with the forming head overhanging and eliminates a stand or bench for site work. The accompanying illustration shows the equipment in its latest form.

These modifications have not necessitated any price increase. The Staffa equipment is manufactured by Chamberlain Industries Limited, Staffa Works, Staffa Road, Leyton, London, E.10.

Power Press

THE N.I. power press is available with a capacity of 40 tons in geared and ungeared versions. It is suitable for the production of general pressed components.

The body is a high-duty iron casting. Removable tie rods are fitted as standard. Inclination is by screw and nut, locking being arranged at 16-26 deg. and 36 deg. to the vertical.

In the single-reduction press, the transmission is direct from motor to the flywheel mounted on the crankshaft, by vee-belts. Double-reduction models have vee-belts in the first stage, the flywheel being mounted on a backshaft. The second stage is by gears. All transmission bearings are of phosphor bronze. A design feature is a phosphor bronze bearing positioned between the flywheel (or main gear, in the case of geared models) and the crankshaft, which is effective when the clutch is disengaged.

The key-type clutch has been developed to overcome all the normal weaknesses of this form of clutch. The slide, or ram, is guided by adjustable vee-type gibbs at each side; a solid p.b. cup takes the thrust of the connecting rod ball end; adjustment is by ratchet. An adjustable top ejector is fitted as standard. The bolster is detachable and is fitted with a removable control insert ring.

The press is controlled by foot lever, operating through a control box which has a single stroke or continuous-run selector. Stroke adjustment is by a solid p.b. eccentric keyed to the crankshaft pin in any one of four positions thus increasing or diminishing the effective crank-throw.

Respective particulars of the geared and ungeared versions are: stroke adjustment, $1\frac{1}{2}$ -4 $\frac{1}{2}$ in., $\frac{1}{2}$ -3 $\frac{1}{2}$ in.; strokes per min., 50,



100. Both have net weights of 7,850 lb. and have base dimensions of 55 in. deep by 31½ in. wide. They are 95 in. high.

Particulars may be obtained from the manufacturer, Norton Industries Limited, Spring Road, Ettingshall, Wolverhampton.

F.H.P. Oil Burner Motors

OIL burner flange versions of the manufacturer's "T" series of streamlined fractional h.p. motors are now available. This range of motors with oil burner flanges specially designed to comply dimensionally with American N.E.M.A. standards, is suitable for industrial and domestic applications. It is available in drip-proof form in sizes ½ h.p.-0.95 h.p.



three-phase, ½ h.p.-½ h.p. single-phase, and in totally enclosed form ½ h.p.-½ h.p. three-phase and ½ h.p.-½ h.p. single-phase.

Like the other "T" series, the drip-proof version of the oil burner flange motor has symmetrical ventilation from twin fans which draw air over the bearings and windings and dispel it through holes in the lower part of the stator shell.

The centrifugal gear and open circuiting switch in these machines function quietly within close speed tolerances irrespective of the load inertia and, despite their small size, both components will perform reliably throughout the life of the motor.

The oil well has a larger capacity than in earlier models, being sufficient to ensure trouble-free running without attention for at least a complete heating season.

Marathon III sleeve bearings are stated to have a silent performance and require negligible maintenance.

Further details of the "T" series motors may be obtained from the manufacturer, Crompton Parkinson Limited, Crompton House, Aldwych, London, W.C.2.

Woodworking Saw Bench

ATEN-IN. Tilting Arbor saw bench model A.G.S., has been added to the Burgreen range of woodworking machinery. It has a maximum depth of cut of 3½ in., and will cut to the centre of a 50-in. panel.

The table, a heavily ribbed casting, surface ground for accuracy, has a surface of nearly 8 sq. ft., suitable for supporting large plywood or plastic sheets. An extension with adjustable platform and floor supports is available; this can be fitted on either side of the machine, to increase the capacity to 48 in. from saw to guide plate.

The body of the machine is a one-piece casting mounted on a fabricated steel sub-base. The saw cant to 45 deg. by a

handwheel in front of the machine. Also, it rises and falls by screw movement actuated by a handwheel. The saw guard and riving knife automatically cant with the saw and give full protection.

Although rigid they can be quickly removed and replaced before and after moulding operations.

The drive from motor to saw spindle is by three short-centre vee-belts with tensioning adjustment. A fence extends the full width of the machine and moves on front and rear precision ground circular section guide bars. Rapid or micro-adjustment is provided. A single lever operated cam lock with special alignment features secures the fence to the front and rear bars in one movement. The fence movement to the right of the saw is 25½ in. and 15½ in. to the left.

The price of the A.G.S. saw bench is £95. Further details may be obtained from the manufacturer, Wadkin Limited, Green Lane Works, Leicester.

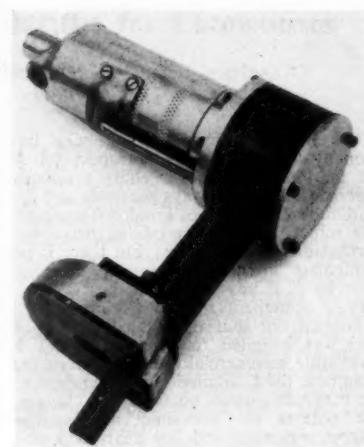
Pneumatic Hand Saw

AN air-operated hand saw which makes use of a short length of hacksaw blade as the cutting medium has been developed. To allow a choice of speed, two versions of the saw are in production; one model works at 2,500 r.p.m., the other at 4,500 r.p.m.

The saw can cut light alloy up to ½ in., mild steel up to ¼ in., and gauge steel up to ⅛ in. It is suitable for cutting holes of any shape in flat sheets or steel tubes. Glass fibre also can be cut, and a special base has been designed to prevent the glass dust blowing back and penetrating the moving parts.

An advantage of the tool is stated to be its ability to operate for indefinite periods. The exhaust air is taken through the body of the saw, down through the piston and on to the blade. This ensures a constant flow of air to cool the blade and other moving parts; at the same time this clears away the swarf. Hand saws of this type which are electrically-powered tend to overheat and may burn out when stoppages occur, it is pointed out.

There is only one point of lubrication, at the air inlet. The lubricant then follows the same path as the air flow.



As the tool uses only 3 in. of hacksaw blade, either new or used, a considerable saving in the cost of saw blades is claimed. The saw is covered by Patent No. 778019.

Further details may be obtained from the manufacturer, Sir W. G. Armstrong Whitworth Aircraft Limited, Baginton, Coventry.

Earth-Moving Equipment

AMETHOD of single-ram blade operation by Bomford & Evershed Limited is stated to be an advance in the design of earth-moving machinery.

The all-purpose bull-angledozer blade is known as the Sapper Powerdozer, for which patents are pending.

The blade is designed to operate with maximum effect within the power limits of the tractors, the attachment points having been reduced to a minimum. It is operated hydraulically by a small ram mounted beneath the tractor body, a feature which leaves room at the front of the tractor for other fitments.

The price of the Sapper Powerdozer is around £130. Details may be obtained from Bomford & Evershed Limited, Salford Priors, Evesham, Worcs.



B.T.C. Passenger Charges Scheme, 1958

Approval of scheme for maximum charges sought from Transport Tribunal: no immediate general increase in actual fares

The British Transport Commission last Monday submitted to the Transport Tribunal in draft a passenger charges scheme covering British Railways generally and the road and rail services of London Transport. The scheme seeks to establish maximum permissible levels of fares, but there is no immediate intention of raising fares to these levels if power is granted.

In a statement by the Commission it is pointed out that the Transport Act of 1953 was intended to give the B.T.C. a reasonable commercial freedom, but at the same time the Commission was required to put maximum levels on fares and charges. The scheme for maximum merchandise charges was approved last year, and was an exceedingly complicated matter. The Commission has now produced proposals for maximum passenger fares; but these are quite simple.

"Headroom" for Adjustments

The levels of maximum passenger charges, if approved, will afford "headroom" for such general or selective adjustments as may be necessary in the future, within the permitted maxima, without the necessity of applying for specific increases of specific fares at relatively short notice, and so will allow the Commission to pursue a more flexible commercial policy.

Features of Scheme

The following is a summary of the principal features of the new scheme:—

British Railways (outside London Area)

With minor exceptions, the ordinary passenger fare has been at the rate of 2d. a mile second class since September 15, 1957, when the rate was raised from 1·88d. a mile. (The Transport Tribunal approved the rate of 2d. a mile from January 1, 1953, but the rate was not applied until September, 1957.) Authority is now being sought to fix the maximum permissible rate at 3d. a mile second and at 4½d. first class.

There are no proposals at this time to make any general use of this margin of flexibility. About one-half of all ordinary travel is made at concession rates (e.g., mid-week and day returns) which have been introduced for commercial reasons, and will continue to be fixed on a commercial basis.

Continental boat trains

Maximum charges are proposed for Continental boat trains between London and Folkestone or Dover. The special fares for these services have been covered by statutory authority for many years before nationalisation of the railways in 1948, and afford some compensation for the high cost of providing all-the-year-round Continental services.

Early morning return tickets (outside London)

At present the Commission is obliged to charge reduced fares for early morning travel (i.e., a journey due to finish not later than 8 a.m.) between any two stations up to 60 miles. It has consistently stated that it regards these fares as an anachronistic survival from the days of "workmen's" tickets, and that they should be abolished except where there is a good commercial reason for retaining them. While the draft scheme seeks to abolish the obligation to

issue early morning returns, the Commission would be free to issue them or not according to commercial and other justification.

Season ticket scales (outside London)

At present there are two separate season ticket scales: one for British Railways outside London, and the other for the London Transport Executive and the London Area lines of British Railways. The scale for British Railways outside London is slightly lower than the other. In future the Commission proposes to have only one scale which will be a maximum season ticket scale.

With British Railways outside London, the new maxima provide "headroom" ranging from 18 per cent at two miles to 50 per cent at 50 miles and over; as before, they give a substantial discount on travel at ordinary fares. These season ticket scales are maximum scales and the Commission has no intention at this time of exercising these maximum powers to the full.

London Transport

The proposed scales of maximum permissible charges for London Transport ordinary fares and season ticket rates are shown in the accompanying table, where they are compared with the rates actually in force. As with British Railways outside London, the scheme does not make specific provision for early morning fares in the London area; freedom is sought to deal with such fares as may be considered commercially expedient. It is not the immediate intention, however, to exercise these maximum powers to the full.

Besides the proposed new maximum fares scales for London Transport, powers are being sought: (a) to round up children's fares to the next 1d. instead of charging the exact half-fare as at present (this would also apply to British railways); and (b) to charge, on all-night bus and trolleybus routes where patronage is limited and the services are at present operated at a heavy loss, up to twice the proposed maximum fare applicable on normal services.

British Railways, London Area

As has been provided in various charges schemes since 1950, fares on the London, Tilbury & Southend Line of British Railways would be subject to the same maxima as are proposed for London Transport, and ordinary fares on other lines of British Railways in the London Area would be subject to the same maxima as are proposed for railways outside London, subject as before to the provision, where cheaper, of a day return fare equal to two London Transport single fares for the same distance. Season tickets would be charged on the same scale as London Transport.

Special services

The scheme proposes that the Commission may charge "such reasonable charges as it may determine" for any train or vehicle specially provided for particular passengers or purposes, trains subject to supplementary charges (e.g., trains with special amenities), and for a number of miscellaneous services (e.g., sleeping berths; seat reservations; luggage in advance; cloakroom or left-luggage facilities, and inter-station omnibus services). To provide headroom above the present scale, it is pro-

posed to fix the maximum charges for excess luggage at about 25 per cent over the existing charges.

SUGGESTED L.T.E. MAXIMUM ORDINARY SINGLE FARES

Miles	Existing Scale	Suggested Scale of Maximum Charges	"Headroom"
1	s. d. 0 3	s. d. 0 3	s. d. —
1½	0 4	0 5	0 1
2	0 5	0 5	—
3	0 6	0 7	0 1
4	0 8	0 9	0 1
5	0 10	0 11	0 1
6	1 0	1 1	0 1
7	1 2	1 3	0 1
8	1 4	1 5	0 1
9	1 6	1 7	0 1
10	1 8	1 9	0 1
11	1 10	1 11	0 1
12	1 11	2 1	0 2
20	3 0	3 5	0 5
30	4 3	5 1	0 10
40	5 7	6 9	1 2
50	6 10	8 5	1 7

Questions Before International Railway Congress

Summaries have been published in issues of this journal between April 11 and August 29 inclusive of the reports on replies received from railway administrations to questionnaires addressed to them in connection with the 10 questions to be discussed by the forthcoming Seventeenth Congress, in Madrid, of the International Railway Congress Association. Two questions are being dealt with by each of the five sections of the Congress.

Two reporters prepared on behalf of the I.R.C.A. a report co-ordinating the replies to the questions concerned which have been sent in by a group of countries. The two groups may be classified very roughly as those of the railways in English-speaking countries, or those of railways which tend to follow, in general, British and those which follow Continental practice; this, however, is only a very approximate classification. The groups of countries are shown respectively as B ("British") and C ("Continental") in the list below; the date in brackets is that of the issue of *The Railway Gazette* in which the summary was published.

SECTION 1: WAY AND WORKS

Question 1: Problems presented by the ageing of bridges and viaducts. Long-term effects of fatigue and corrosion in steel bridges and weathering of masonry. Rational methods of maintenance of bridges. Repair and strengthening.

Reporters: (C) Dr.-Ing. G. Cividalli, Italian State Railways (July 25); (B) Herr F. Lemmerhold, German Federal Railway (June 27).

Question 2: Very long rails. Welding methods. Transport of long welded rails and necessary equipment for transporting, laying, fixing, ballast, tamping, and so on. Economic aspect of the question. Present tendencies.

Reporters: (C) Señor A. Crespo Mocorrea, Spanish National Railways (August 29); (B) Mr. F. Jackson, Assistant Chief

Civil Engineer (Maintenance), South African Railways & Harbours (May 30).

SECTION II: LOCOMOTIVES AND ROLLING STOCK

Question 3: Design and improvement of railcars and multiple-unit diesel trains

Reporters: (C) Senhor Antonio da Silva Canavezes, Jnr., Portuguese Railways (May 2); (B) Dr.-Ing. G. A. Gaebler, German Federal Railway (April 25).

Question 4: Comparative study of the periodical maintenance and repair of electric locomotives

Reporters: (C) Monsieur M. Viani, R.E.N.F.E. (August 8); (B) Mr. K. J. Cook, Chief Mechanical & Electrical Engineer, Eastern and North Eastern Regions, British Railways (May 9).

SECTION III: WORKING

Question 5: (a) Handling facilities in goods depots for consignments in less than carloads, containers. General arrangement of depots. Liaison between the staff of the depot and the delivery services: (b) railway problems regarding the introduction of general palletisation

Reporters: (C) Monsieur Marchand, French National Railways (May 16); (B) Mr. Dorjee, General Manager of the N.V. Van Gend & Loos, Utrecht (May 23).

Question 6: When changing over to electric and diesel traction for passenger train services, research into principles which may lead to a rational and efficient organisation

Reporters: (C) Monsieur R. Carlier, Belgian National Railways (April 18); (B) Mr. G. F. Fiennes, Traffic Manager (Great Northern), British Railways, E.R. (April 11).

SECTION IV: GENERAL

Question 7: Advantage of the use of high-speed electronic apparatus for certain administrative work such as: (1) making out of pay slips, (2) traffic and stores accounts, (3) checking movement of empty and loaded wagons, thereby improving the distribution of rolling stock, and (4) compiling more rapidly already existing statistics, with the possibility of preparing new ones

Reporters: (C) Monsieur B. H. de Fontgalland, French National Railways (August 1); (B) Mr. Sten Ubbe, Swedish State Railways (June 13).

Question 8: Financing and conserving railway properties and assets; study and comparison for limited companies, partially State-owned companies and State Railways, of the financial means used for normal renewal of installations and rolling stock; and amortisation and renewal.

Reporters: Monsieur W. Keller, Swiss Federal Railways (June 20); (B) Ministerialrat Dipl.-Ing. V. Felder, Austrian Federal Railway (July 18).

SECTION V:

LIGHT AND COLONIAL RAILWAYS

Question 9: Experience obtained concerning the undulatory wear of rails

Reporters: (C) Senor L. Prieto Delgado, R.E.N.F.E. (July 11); (B) Mr. N. C. Vogan, Chief Civil Engineer, New South Wales Government Railways (July 4).

Question 10: In view of the development of light railways, what are the means to be adopted in order to reduce the operating costs of these railways and what are the resulting basic amendments?

Reporters: (C) Prof. Dr. Ing. E. Stagni, Italian State Railways (August 22); (B) Mr. S. L. Kumar, Director Research, Railway Testing & Research Centre, Ministry of Railways, Lucknow, India (August 15).

Cartridge-Type Roller Bearings for Locomotives

Design suitable to replace conventional journal bearings

All-purpose cartridge-type roller bearings are now being fitted to some locomotives built in the U.S.A. The bearing, which has already been applied to goods vehicles, is supplied completely assembled and lubricated with the correct amount of grease by the manufacturer; when it is received it is ready for pressing on the axle.

The General Electric Company Locomotive & Car Equipment Department of Erie, U.S.A., has devised a method of applying this type of bearing to mine haulage and industrial diesel-electric shunting locomotives in sizes ranging from 15 to 115 tons. Existing locomotives fitted with conventional journal bearings can be changed over to roller bearings by a small modification of the journal box and axle, and the addition of an adapter.

The adapter is designed to permit renewal of the pedestal wear plates, and installation and removal of the bearing without lifting the locomotive. This is made possible by thrust lugs of the adapter located on the outside of the truck journal box guides. It is only necessary to block the bogie equalisers and jack one corner of the bogie sufficiently to lift them clear of the pocket in the top of the adapter.

The adapter can then be lifted free of the journal unit and removed, giving access to the pedestal wear plates. The bearings can be replaced by removing the adapter and pulling the old bearing off and pressing the new one in place, using a hydraulic jack.

Additional Strength

As mentioned, the adapter is designed so that the thrust lugs are on the outside of the journal box guides rather than on the inside, as in conventional roller bearing journal boxes. This results in a more rigid bogie, as the lateral forces are taken on the outside instead of the inside of the truck frame. Thus, the areas where the sideframes are attached to the bolster receive compressive rather than tensile stresses, greatly reducing or eliminating

the stress concentrations and fatigue in this area.

Another advantage claimed for the cartridge type of roller bearing is economy. As this type is produced in large numbers, cost is relatively low. Maintenance and inspection are stated to be practically non-existent. The journal is fitted with a rubbing type grease seal. Depending on service conditions, this type of bearing can run for periods up to three years without the addition of grease.

So far these bearings have been applied on 41 diesel-electric shunters ranging from 35 to 115 tons. These are in service on docks in South America and in steel plants in India.

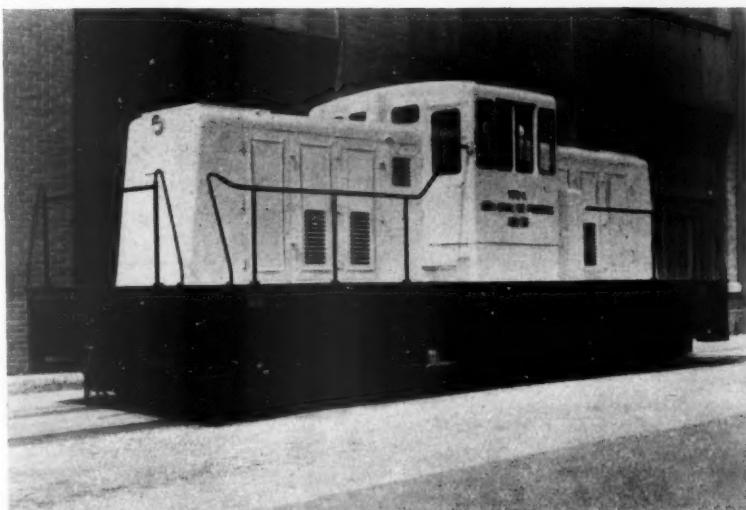
Beside these applications, the bearing is now available on the manufacturer's standard diesel-electric industrial shunting locomotives, and certain sizes of electric mine haulage locomotives.

Stations Closed in N.E. Region

Services will be withdrawn as from September 15 from certain stations and halts in the North Eastern Region of British Railways. The approval of the appropriate Transport Users' Consultative Committees has been obtained.

In the following list of stations concerned, P denotes that passenger and G that goods services are to be withdrawn:

Heck (P) and Balne (P), between Doncaster and Selby; Riccall (P and G), between Selby and York; Beningbrough (P and G) and Sessay (P), between York and Northallerton; Otterington (P), between Thirsk and Northallerton; Cowton (P) and Danby Wiske (P and G), between Northallerton and Darlington; Newby Wiske (G), between Northallerton and Harrogate; Hessey (P), Marston Moor (P), Hopperton (P) and Goldsborough (P), between York and Harrogate; Heddon-on-the-Wall (P), Lemington (P), and Newburn (P), between Newcastle and Carlisle; Forest Hall (P), Killing-



General Electric 470-h.p., 65-ton diesel-electric shunter for Port of Buenos Aires fitted with cartridge-type roller bearing journals

worth (P), Annitsford (P), Plessey Halt (P), Stannington (P and G), Chevington (P and G), Warkworth (P and G), Little Mill (P and G), Christon Bank (P and G), Goswick (P and G), on the East Coast main line between Newcastle and Berwick; Redmarshall (G), between Stockton and Ferryhill; Cockfield Fell (P) and West Auckland (G), between Bishop Auckland and Barnard Castle; Hunwick (G), between Durham and Barnard Castle; Ackworth Moor Top (G), on the branch from Brackenhurst Junction between Pontefract and Moorthorpe; and Leeds Marsh Lane (P), between Leeds City and York.

In certain cases, withdrawal of goods traffic facilities means that the station becomes a public delivery siding, available for full wagon load traffic. Arrangements are being made for C. & D. and parcels traffic. Alternative passenger facilities are provided by bus services in the areas concerned.

First All-Diesel Depot in London Midland Region

All 41 steam engines previously stabled at the Devons Road Motive Power Depot (Bow, E. London) have now been replaced by 31 diesels. The final changeover took place on August 25 and the depot thus becomes the first in the London Midland Region to go over entirely from steam to diesel traction. The complete diesel stock will be 13 English Electric Type "I" 1,000 h.p., 10 B.T.H. Type "I" 800 h.p., and eight North British 330 h.p. All are fitted with automatic train control to conform with the system in operation on the adjacent London, Tilbury & Southend Line.

The depot services locomotives for freight train working between docks in East London and Willesden and Acton over the former North London Railway lines and London dock lines. The services trains worked are largely involved in the movement of inter-regional traffic.

The operation of the depot will supply experience for the planning of future conversion of other locomotive depots in the

Region. In addition the changeover at Bow from steam to diesel locomotives will help to minimise local smoke emission.

Work on the conversion of the depot started last autumn with the installation of oil fuelling facilities and since then other alterations have been carried out to cover all the requirements for the maintenance and servicing of diesel locomotives. These include the provision of oil fuel storage tanks and fuelling equipment and subsidiary alterations to the permanent way, drainage and paving; the installation of lubricating oil storage tanks and battery charging equipment and the deepening and illumination of inspection pits. A workshop and store has been arranged. The plans for the conversion were drawn up after consultation between the management and staff.

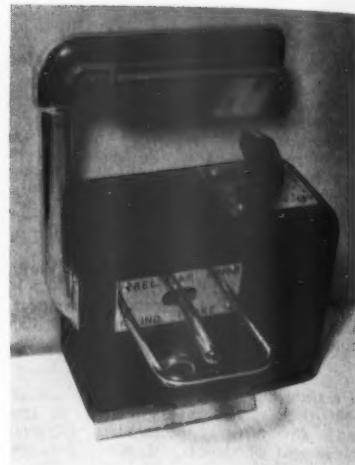
Portable Diesel-Electric Control Unit

A portable control station which permits the operation of diesel-electric locomotives from any position in the cab has been developed by General Motors Diesel Limited, London, Ontario.

The portable control box, seen in the accompanying illustration, has a combination throttle and reverser control, a brake lever, an emergency stop push-button and a combination dead-man control and carrying handle; it measures 5 in. x 8 in. x 9 in. and weighs 40 lb. A 14-conductor cable plugs into the underside of the control box and connects it to the regular control stand. The combination throttle and reverser handle is arranged so that it is impossible for the driver to change from forward to reverse unless the throttle is at the idle position.

The equipment, which has to be mounted on the locomotive, consists of a reducing valve, two solenoid valves and a check valve for control of the locomotive brake, and another solenoid valve to work with the dead-man control.

As long as the control box is carried or held by the handle, the dead-man safety control is paralleled with the existing loco-



Control box, showing carrying handle, throttle (top), and brake lever and emergency stop button (front)

motive safety control foot pedal and is in a safe position.

The brake handle applies and releases the locomotive brakes by electrically controlling the solenoid valves which control the supply or release of air to the brake cylinders at a fixed rate. Thus, the length of time that the handle is held in either the apply or release position determines the amount of pressure in the cylinders. A "fail safe" circuit is employed to apply the brakes when the circuit is interrupted.

When the portable control box is not in use, it can be stowed on a bracket on the driver's control stand.

A similar control device for use on shunting locomotives equipped with a pneumatic throttle control has been developed.

Staff and Labour Matters

L.T.E. Redundancy Compensation

A surplus of some 600 maintenance staff in London Transport garages has arisen. This has been brought about partly by reduced services and partly by improved maintenance methods. To deal with the redundancy, an agreement has been freely negotiated with a panel consisting of the union side of union officials and elected representatives. This panel took the proposed agreement to a shop stewards' conference with a recommendation for acceptance. The conference endorsed the agreement with a large majority and recommended it to the branches.

In so far as redundancy is not met by normal wastage the agreement provides for the compulsory retirement of staff who under different conditions had been retained past normal retiring age of 65; and for voluntary retirement by men between 60 and 65 with compensatory payments related to length of service. The number of men aged 65 and over concerned by the agreement number 350. It is hoped that the rest of the 600 will be met by voluntary retirement between 60 and 65.

Compensation ranges from 20 weeks of pay at basic rate for men with a minimum 15 years of service to 14 weeks' basic rate for men with seven years or over of service. Compensation for men with intermediate years of service is graduated. In addition, various *ex gratia* payments will be granted.



Servicing bay at Devons Road Motive Power Depot, showing inspection pits

Contracts and Tenders

English Electric diesel-electric locomotives for East Africa

The English Electric Co. Ltd. has received a contract from the East African Railways & Harbours for eight 1,840-h.p. diesel-electric locomotives. Each locomotive will be powered by an English/Electric 12-cylinder charge cooled SVT diesel engine, will have a 1 Co-Co 1 wheel arrangement, and a maximum service speed of 45 m.p.h. They will be used on the main-line services between the Port of Mombasa, Nairobi, and Kampala, on the shores of Lake Victoria.

An order has been placed with the English Electric Co. Ltd. by the Southern Region of British Railways for further complete 600 h.p. diesel-electric equipments which will be used in the Region's manufacturing programme for the modernisation and expansion of passenger services in Hampshire. The order covers equipment for four motor coaches, four driving trailer coaches, and 22 non-driving trailer coaches. The new stock will be built at the Southern Region Eastleigh and Ashford Works.

Ransomes & Rapier Limited, Ipswich, has received an order for six "Rapier 4" standard mobile cranes from the Cunard Steam-ship Co. Ltd., Liverpool. They are required for moving cargo to and from ships to dock sheds and for loading and unloading railway wagons and motor lorries.

British Railways, London Midland Region, has placed the following contracts:

Gee Walker & Slater Limited, London, W.1: combined stores and staff amenities, carriage shed, Bletchley

Leonard Fairclough Limited, Adlington, Lancs: provision of inspection pits, motive power depot, Crewe North

A. J. Binns (Northern) Limited, Liverpool 3: fencing renewal programme 1958, Manchester district

The Cubar Construction Co. Ltd., Manchester 3: staff amenities, Glazebrook Junction, Irlam

Mills Scaffold Co. Ltd., London, W.6: provision of scaffolding for renewal of covering, south end of roof, St. Pancras Station

E. B. Jones & Rawlinson Limited, Salford 6, Lancs: new signalbox, London Road, Manchester

S. Rhodes & Co. Ltd., Sheffield 9: removal of track and structure, Ladbroke branch

British Challenge Glazing Co. Ltd., London, E.15: supply and fixing of patent roof glazing, extension to Ancoats Goods Depot, Manchester

Howell Jones & Richard Lloyd Limited, Holyhead, Anglesey: adaptation of sheds for T.T. attested cattle at Holyhead

Brooks Ventilation Units Limited, London, W.C.2: improved ventilation in machine and fitting shops, Derby Loco Works

Tinker & Young Limited, Manchester: reconstruction of Oxford Road Station, Manchester

Leonard Fairclough Limited, Adlington, Lancs: work in connection with re-organisation of car repair shops, Birkenhead North

Trinidad Lake Asphalt Co. Ltd., Liverpool 2: resurfacing of roadway, Canada Dock Goods Station, Liverpool

G. & J. Waterman Limited, Watford, Herts: alterations to Work Study Training Centre, The Grove, Watford

Henry Hope & Sons, Ltd., Smethwick, Birmingham: patent glazing, renewal of the roof at the south end of St. Pancras Station

Gee Walker Slater Limited, London, W.1: new washing facilities for staff at motive power depot, Nuneaton

R. Partington & Son Ltd., Middleton, nr. Manchester: improvements and reconstruction of buildings on up platform, Navigation Road Station

McKean Smith & Co. Ltd., Wolverhampton: Road Motor Depot, Garrison Street, Birmingham

Mitchell Construction Co. Ltd., Peterborough: foundation and reinforced concrete frame of stores building, Crewe Loco Works

Leonard Fairclough Limited, Adlington, Lancs: alterations and improvements at Dentonholme Goods Depot, Carlisle

W. H. Heywood & Co. Ltd., Westminster, S.W.1: renewal of roof covering over Warehouse, Brunswick Station, Liverpool

Industrial Engineering Company, London, W.1: repairs to main roof covering, St. Marys Goods Depot, Derby

Soil Mechanics Limited, London, S.W.3: provision of concrete bored piles, bridge No. 40, Blackburn-Hellifield Line.

British Railways, Scottish Region, has placed the following contracts.

P. & W. Anderson (Glasgow) Limited, Glasgow: extension to chain repair shop, Cowlers Works, Glasgow

Edward Curran Engineering Limited, Cardiff: wheel cleaning machine, Cowlers Works, Glasgow

James Laidlaw & Sons Ltd., Rutherglen: reinforced concrete work for office buildings, Eglington Street new parcels depot, Glasgow

T. Cooper & Co. (Builders) Ltd., Glasgow: staff amenities, Buchanan Street carriage cleaning sidings, Glasgow

The Lanarkshire Welding Co. Ltd., Wishaw: new steel superstructures, bridges Nos. 236 and 239, between Guthrie and Glasterlaw

Miller & Stables Limited, Edinburgh: electrical power and lighting installation, Townhill Junction new wagon repair depot, Dumferline

Gilbert Ash Limited, London: construction of office and amenities block, Townhill Junction new wagon repair depot, Dumferline

Murdoch MacKenzie Limited, Motherwell: earthworks, long rail welding shop, pile foundations, drainage, and so on, at the Motherwell long rail welding plant

Thomas Henderson & Son (Glasgow) Ltd., Glasgow: track sectioning cabin, Dalmuir Park

Standard Telephones & Cables Limited, London: supply and installation of control telephone equipment, Airdrie/Helensburgh line and branches, and train describer apparatus, Glasgow Central railway signalling scheme

Siemens & General Electric Railway Signal Co. Ltd., Wembley: provision of electric colour light signalling, Airdrie to Kelvinhaugh.

The British Embassy in Madrid has reported that the Spanish State Railways (R.E.N.F.E.) has issued details of a new five-year plan for the modernisation of its tracks, rolling stock, and other equipment. The total cost is to be 24,700 million pesetas.

The following is a list of the main items of the plan:

	Million Pesetas
Track renewal, over 2,114 miles plus maintenance	6,600.5
New stations	682
50 high-power diesel locomotives	1,120
192 350-h.p. diesel shunting locomotives	1,241
70 130-h.p. diesel shunting locomotives	157.5
Conversion to oil burning of 100 steam locomotives	140
10 172-passenger railcars	200
30 light railcars	202.5
11 324-passenger TALGO-type trains	208
15 TALGO locomotives	225
100 passenger cars	330
130 vans	86.5
10,000 wagons	2,250
400 ore hopper wagons	200
50 tank wagons	30
Workshops and offices	513
Telecommunications equipment	104
Signalling equipment	490
Electrification	9,067

The address of the Spanish State Railways (RENFE) is Principe Pío, Torreón de Levante, Madrid. The Board of Trade reference is ESB/19723/58.

The Director General of India Store Department, Government Building, Bromyard Avenue, London, W.3, invites tenders for the supply of main car frames with clips, machined and rough oxy-cut, and boiler plates for 120 W.G. locos. See Official Notices on page 292.

Notes and News

Closure of Earith Bridge Station, Eastern Region.—The Eastern Region of British Railways has announced the closure of Earith Bridge Station on the St. Ives-Ely line from October 6, 1958. Alternative facilities for parcels and freight traffic will be available at Bluntisham, Somersham, Sutton and Haddenham stations.

A. W. Chapman Limited Introduces Leveroll Seat Suspension.—A design of suspension which has particular application to drivers' seats for heavy-duty road vehicles and so on, has been introduced to this country by A. W. Chapman Limited. A demonstration of the features of the arrangement, known as the Leveroll Level Ride suspension system, was held for members of the technical Press on Tuesday. A vibrating table showed clearly the flexibility of the suspension compared with a normal fixed seat.

Parmiter Hope & Sugden Limited Trading Results.—The results of Parmiter Hope & Sugden Limited for the year ended March 31, are described in the directors' report as satisfactory. The improvement in turnover experienced last year has been maintained and, in fact, exceeded by a small amount. However, this has been offset by a marked, but probably temporary, reduction in the turnover of the subsidiary, which leads to an overall decline in turnover of about 5 per cent. This is reflected by a reduction in consolidated profit before tax of about 2½ per

cent which is held to be "very satisfactory under the circumstances," despite a decreasing ordering rate experienced by the parent company.

Simplon Line Reopened after Flooding.—A section of the Simplon railway, in Italy, between Iselle, at the south-eastern end of the Simplon Tunnel, and Domodossola, which was blocked by floods and landslides towards the end of August, was partially reopened earlier this week. From Varzo to Domodossola travellers still were being conveyed by motorcoach. The Simplon Orient Express and other Paris-Venice trains were being diverted by the Mont Cenis Tunnel.

No North British Preference Dividend.—No dividend is to be paid on North British Locomotive Co. Ltd. 5 per cent cumulative preference shares. The preference dividend is in arrears since April 1, 1956.

Scottish Region Export Express Service.—British Railways, Scottish Region, has introduced a new export express service from a large number of stations throughout Scotland to Glasgow and Grangemouth Docks. Goods despatched in Scotland for export overseas by British Railways will

be available to the shipping company for loading into their vessel the following day. The export traffic will be loaded in fitted wagons, and gummed labels fixed to the wagon sides will show in red letters the legend "Export Express Service" and name of ship to aid rapid identification. The progress of such consignments will be watched during the journey to ensure next day delivery. Consignments to Grangemouth Docks will be accepted in full wagon loads only, from the important cities and towns in Scotland. Traffic for export from Glasgow Docks will be accepted in sundry consignments as well as in full wagon loads, and the scheme will cover a large number of stations including Inverness, Aberdeen, Dundee, Perth, stations in Fife, Edinburgh and district, Ayr, Kilmarnock, and Dumfries.

New Car Park at Edgware Station, London Transport.—A new car park for 151 motorcars has been opened at Edgware Station on the Northern Line of London Transport. This brings the number of Underground stations with car parks up to 44, accommodating more than 2,500 cars. In the last two years the London Transport Executive has doubled car parking space at Underground stations, and is planning to open new car parks at Amer-

sham and South Harrow Stations, and extend existing car parks at Harrow-on-the-Hill, High Barnet, Mill Hill East, South Woodford and Totteridge. This will provide space for over 300 more cars.

Wickman Limited Financial Results.—The reference on page 263 of last week's issue should have been to Wickman Limited, and not to Wickham Limited, as was printed in error.

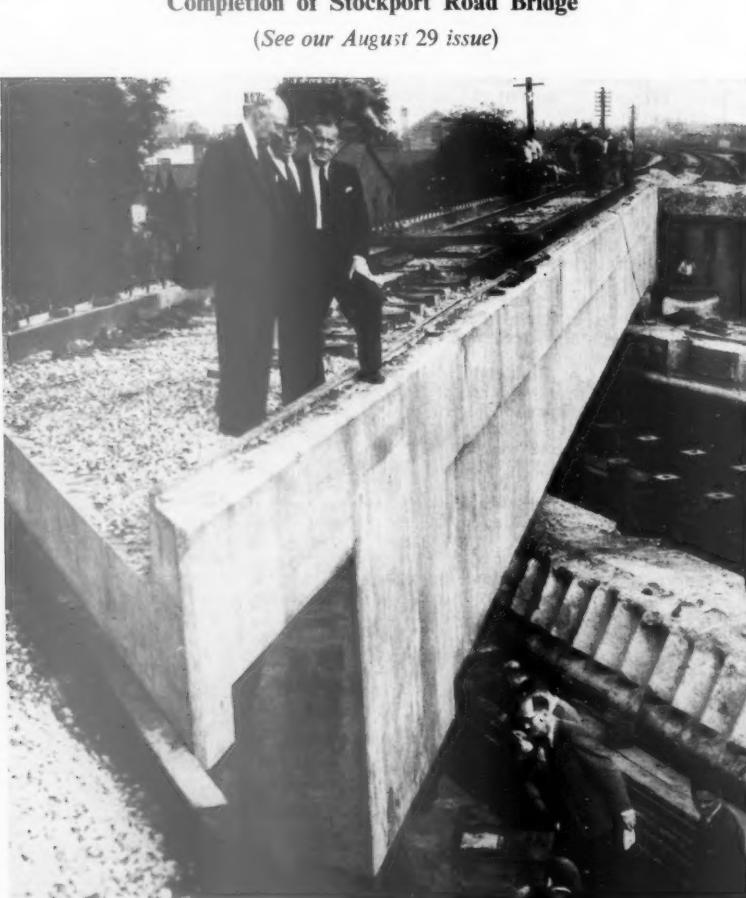
Banana Traffic to Ireland via Heysham.—For the first time, bananas for Northern Ireland were conveyed via Heysham on September 2, when 25 container loads left for Belfast on British Railways ship *Container Enterprise*. The bananas were moved from Garston (Liverpool) by rail to Heysham on Monday. A further 25 containers of bananas followed on Wednesday and it is expected that subsequently some 40 containers will pass by the Heysham/Belfast route each week.

Lower Trading Profits for Murex Limited.—Group trading profits of Murex Limited for the year ended April 30 were £718,240, compared with £795,756 for 1956-57. After tax of £431,570 (£446,537), the net profits were £291,650 (£351,709). Current assets amounted to £5,263,174 (£5,752,337); these include stocks of £3,551,799 (£3,479,409), debtors of £1,327,339 (£1,468,298) and cash £384,036 (£575,205). Tax reserve certificates of £229,425 have been realised and current liabilities totalled £1,370,914 (£1,597,539).

L.T.E. Train Dead-man Control Rendered Inoperative.—An L.T.E. District Line train from Richmond to Charing Cross ran through South Kensington Station on Sunday, because the motorman, who had become unconscious, had fallen across the controls, rendering the dead-man handle inoperative. The guard stopped the train with an emergency brake application as the train continued through the next station, Sloane Square. Later, the train continued to Victoria with the guard at the controls, and a station inspector from Sloane Square acting as guard.

Central Stores at Peterborough, Eastern Region.—A Central Stores Depot has been established at Peterborough to allow of an improved stores service in the Eastern Region in respect of common user non-technical materials, and materials of civil engineering and for signal and telecommunications purposes. The use of this depot has resulted in the closing of existing stores depots at Doncaster (Common User), Retford (Telegraph) and Godley (Mechanical Signalling). These depots were inadequate for future requirements and unsuitable for accommodating and handling stocks in accordance with modern methods. The new depot has also allowed a central stores service for civil engineering sundry supplies to be inaugurated.

New Lighting for Crewe Yards in Preparation for Electrification.—Twelve 150-ft. lattice steel towers carrying batteries of floodlights are to be erected in various parts of the marshalling yards at Crewe, London Midland Region. This form of lighting is being installed because the high-voltage overhead equipment for electric traction requires a greater clearance, and large numbers of existing lighting poles and poles carrying overhead lighting cables must be removed. The first tower has already been erected adjacent to the North Junction signal box and the area to be covered will eventually extend to



Lord Rusholme, Chairman, London Midland Area Board, with Mr. J. Taylor Thompson, Regional Chief Civil Engineer, and Mr. J. Royston, Divisional Traffic Manager, Manchester, L.M. Region; No. 1 girder in position

the Basford Hall yard. The first four towers in the area of Crewe Station are planned for completion this autumn. This installation, it is believed, will be the largest area on British Railways to be lighted in this manner.

English Steel Corporation Limited Interim Dividend.—The interim dividend on the "A" and "B" ordinary shares of the English Steel Corporation Limited has been maintained at 3 per cent, and is payable on September 30. Last year a total of 12 per cent was paid.

First Locomotive for Durgapur.—The accompanying illustration shows a 31-ton diesel-electric locomotive about to be dispatched to Durgapur, West Bengal, the site of the large steelworks being built for the Government of India by the Indian Steelworks Construction Co. Ltd. (ISCON), a consortium of 13 important British companies. It is the first of 10 such diesel locomotives for the works; they are being built by the Yorkshire Engine Co. Ltd. for British Thomson-Houston Co. Ltd. The other 13 locomotives of 72 tons service weight, needed later on, will also be diesel-electric. During the coming year the ten 31-ton locomotives will be used on the site on construction work. After November, 1959, some will be transferred to work in the steelplant, hauling raw materials. By August, 1961, when it is expected the steelworks at Durgapur will be completed, all 23 locomotives will be operating on the 70 miles of works.

British Railways "Absolute" Punctuality Competition.—The "absolute" punctuality competitions between Regions of British Railways, for the highest degrees of complete punctuality in running of all passenger and goods trains in 1957, were won by the Scottish and Southern Regions respectively. The passenger punctuality shield was presented recently by Sir John Benstead, Deputy Chairman, British Transport Commission, to Mr. G. W. Stewart, Assistant General Manager, Scottish Region; and the corresponding freight



First 31-ton diesel locomotive built by the Yorkshire Engine Co. Ltd. for British Thomson-Houston Co. Ltd., for service at Dargapur Steelworks, India

train shield to Mr. C. P. Hopkins, General Manager of the Southern Region, as shown in the accompanying illustration.

Fire at Derby Carriage & Wagon Works.—Fire broke out at Derby Carriage & Wagon works, London Midland Region, late last Monday; two of four bays in a repair shed were partly destroyed. The shed is used for the repair of carriages and wagons, a few of which were also destroyed. An investigation is being made into the cause, and the cost of damage has not yet been assessed.

Electric Train Stranded for Three Hours.—The 5.29 p.m. electric train from Victoria to Bognor Regis, British Railways, Southern Region, was stranded between

Streatham and Mitcham Junctions for 3 hr. last Tuesday. The breakdown occurred at 5.45 p.m. and the train was eventually towed to Mitcham Junction by a steam locomotive at 8.40 p.m.

Sheepbridge Engineering Limited, Chairman's Report.—Lord Aberconway, Chairman, Sheepbridge Engineering Limited, has reported that since the company was formed 10 years ago total capital reserves have increased three-fold from some £2m. to over £6m., due partly to the realisation of the colliery interests. During this time shareholders have not been called upon to approve or provide additional finance, yet the liquid position of the group is strong. Current assets at March 31, exceed by over £3m.—more than the issued capital—the total of current liabilities, future taxation, and commitments for capital expenditure.

Abridged Edition of British Standard on Engineering Drawing Practice.—An abridged, low-priced version of B.S. 308 Drawing Office Practice is intended for technical students in the early stages of an engineering education. This 40-page publication contains much of the information of the complete edition. Each page of the abridged version carries a cross-reference to the equivalent page of the parent edition. Copies of the standard, B.S. 308A, may be obtained from the British Standards Institution, Sales Branch, 2, Park Street, London, W.I. The price is 4s. 6d. (less one-third students' discount).

Nuclear-Powered Locomotive Too Expensive.—A nuclear-powered locomotive which could run for two to three years without refuelling is technically possible believes Mr. J. Edwards, of the naval section, Atomic Energy Research Establishment, Harwell. He stated this in the engineering section of the British Association meeting at Glasgow on Monday, it is reported. However, there appeared to be little object in producing such a locomotive, he added, as the development cost would be millions of pounds, and capital maintenance and running costs would be three to four times as great as for conventional locomotives.



Sir John Benstead presenting the freight train punctuality shield to Mr. C. P. Hopkins

September 5, 1958

Forthcoming Meetings

September 5 (*Fri.*).—The Railway Club, at 320, High Holborn, London, W.C.1, at 7.30 p.m. Paper on "The great Bristol contest of 1835," by Mr. K. G. Carr.

September 5 (*Fri.*) to September 15 (*Mon.*).—Railway Correspondence & Travel Society tour of Austria.

September 6 (*Sat.*).—Railway Correspondence & Travel Society, South of England Branch at the M.P.D. Social Hall, Eastleigh, at 6.30 p.m. Paper on "The North London Railway," by Mr. A. P. Hancock.

September 11 (*Thu.*).—Railway Correspondence & Travel Society, Bristol & District Branch, at the Grosvenor Hotel, Bristol, 1, at 7.15 p.m. Paper on "The pre-grouping railways of South Wales," by Mr. D. S. M. Barrie.

September 12 (*Fri.*).—Electric Railway Society, at the Exchange & Engineering Centre, New Street, Birmingham, at 7 p.m. Paper on "Rapid transit and suburban railways," by Mr. B. J. Primrose.

September 16 (*Tue.*).—Railway Correspondence & Travel Society, East Midlands Branch, at the N.C.S. Guild Room, Toll Street, Nottingham, at 7.30 p.m. Paper on "The Leek & Manifold Railway," illustrated by lantern slides, by Dr. J. R. Hollick.

September 17 (*Wed.*).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, 1, Birdcage Walk, Westminster, S.W.1, at 5.30 p.m. Mr. Robert Arbuthnott's Presidential Address.

September 18 (*Thu.*).—Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. Film show, including "The mechanical maintenance of points and crossings," and "Fitted freight."

September 19 (*Fri.*).—Railway Correspondence & Travel Society, at the Railway Clearing House, Eversholt Street, N.W.1, at 7.15 p.m. Illustrated lecture on "The Talyllyn Railway," by the Earl of Northesk.

September 20 (*Sat.*).—Railway Correspondence & Travel Society, South of England Branch, at the C.B.B. Employees' Club, Palmerston Road, Boscombe, at 5.30 p.m., by Mr. E. A. Course.

September 20 (*Sat.*).—Permanent Way Institution, East Anglia Section. Visit to Potters Bar new tunnel.

September 20 (*Sat.*).—Permanent Way Institution, London Section. Visit to London Airport engineering base to inspect hangars, workshops and aircraft under maintenance.

September 21 (*Sun.*).—South Yorkshire Rail Tour No. 4.

September 22 (*Mon.*).—Historical Model Railway Society, at the Railway Tavern, Liverpool Street, London, E.C.2, at 7 p.m. Paper on old Irish railways entitled "Locomotives and Leprechauns," by Mr. R. G. Detmar.

September 23 (*Tues.*).—Railway Correspondence & Travel Society, West Midlands Branch, at 64, Holyhead Road, Coventry, at 7.30 p.m. Mr. A. F. Cook will discuss locomotive development on the former L.M.S.R.

September 24 (*Wed.*).—Permanent Way Institution, London Section, at the Headquarters of the British Transport Commission, 222, Marylebone Road,

London, N.W.1, at 6.30 p.m. Paper on "Permanent way section manning and its relation to track standards," by Mr. W. A. Hissey.

Railway Stock Market

Active conditions have continued in stock markets, though the recent buoyancy was followed by a reaction. British Funds were lower on balance, and losses, mostly moderate, ruled in industrial shares. Recent demand has produced shortage of shares in the market, because the higher prices have not been followed by a great deal of profit-taking. The yield factor is entering into considerations of the outlook, and if hopes of the bank rate going down to 4 per cent later in the year are borne out, it will mean that all sections of markets will move to a lower yield and higher price basis.

Although best levels have not been held, more interest has continued to be shown in Antofagasta Railway stocks because of the good scope for capital appreciation in the future when dividends are resumed. The ordinary stock is now 14½, and the preference stock 29, which is much below the levels ruling last year when dividends were paid. It is not surprising that the stocks tend to attract attention because of the scope for good capital appreciation as time proceeds and dividends are resumed. Incidentally, if ever there were nationalisation or take-over moves, it would have to be made on a basis well in excess of the current market prices. It is not suggested that any move of this kind is in prospect, though in the past take-over rumours have from time to time attracted some attention in stock markets. There is no doubt that both the ordinary and preference stocks are much undervalued in relation to their break-up values.

United of Havana second income stock has again changed hands around 6½, while San Paulo Railway 3s. units were maintained at 2s. Mexican Central "A" bearer debentures held at around 70½.

Costa Rica ordinary stock was quoted at 16½ and the first debentures at 75, while Chilean Northern first debentures were 45½.

In other directions, West of India Portuguese capital stock was 77½ and the 5 per cent debentures at 67½. Barsi ordinary stock was quoted at 24. Nyasaland Railway shares changed hands around 10s. 6d. at which there is a yield of 11 per cent on the basis of last year's 6 per cent dividend; the 3½ per cent debentures were 68.

Canadian Pacifics, as usual, moved fairly closely with the trend of Wall Street markets, and were \$51 at which there is a yield of over 5½ per cent, which is not unattractive compared with the yield on dollar stocks generally. Moreover, the 4 per cent preference stock, which is of course a sterling stock, yields over 7 per cent at its current price of 54½. It is true, of course, that this stock is non-cumulative as to dividend, but the dividend is well covered, and the yield is certainly a generous one. At 65½, Canadian Pacific 4 per cent debentures yield 6 per cent. White Pass shares have changed hands around \$134.

Recent gains in shares of locomotive builders and engineers were not quite fully held, but they remained rather more active on general recognition that, looking ahead, earnings will benefit from the British Railways modernisation programme. Beyer Peacock 5s. shares at

8s. 6d. yield as much as 9½ per cent on the basis of last year's 16 per cent dividend, while in other directions, Birmingham Wagon shares have advanced to 18s. 6d. and still yield over 10½ per cent, last year's dividend having been 10 per cent. Elsewhere, North British Locomotive lost some of their recent rise and changed hands around 12s. 4d. Charles Roberts 5s. shares rose to 10s. 1½d., and Westinghouse Brake were firm at 38s. 6d., while Wagon Repairs 5s. shares have changed hands around 12s.

The 10s. shares of the Dowty Group held their recent rise and were 36s. 4½d., while Pressed Steel 5s. shares remained active around 18s. British Aluminium have been more active around 53s. 10d. and British Oxygen were favoured around 38s. 3d., at which there is a yield of only 5 per cent, which reflects general confidence that the 10 per cent dividend will be maintained, and that there is scope for higher payments as time proceeds. Vokes 4s. shares rose to 17s. 3d. and elsewhere, awaiting the results, T. W. Ward have been firm at 80s. 6d. Gloucester Wagon 10s. shares changed hands around 16s. G. D. Peters were 23s. 1½d.

OFFICIAL NOTICES

LOCOMOTIVE manufacturing company in the North of England have an immediate vacancy for a MAN between 22 and 30 years of age in their SALES AND SERVICE DEPARTMENT. Applicant must have locomotive shop experience and technical education up to Higher National Certificate standard. Good salary to suitable applicant. Pension scheme. Write in first instance giving full details of age, technical and practical experience to Box 664, *The Railway Gazette*, 33 Tothill Street, Westminster, London, S.W.1.

ASSISTANT ENGINEER (MECHANICAL) required for their London Office by the Crown Agents for Overseas Governments and Administrations, for appointment normally to pensionable establishment on probation for two years. Salary scale £805 by £25 to £855 by £30 to £1,005 by £40 to £1,165 by £45 to £1,210 by £40 to £1,250. The £805 minimum is linked to entry at age 25 and is subject to increase at rate of one increment for each year above that age up to 34. Fully qualified officers at least 27 years old may be eligible for special increase of £75 after two years service. Prospects of promotion. Candidates should have passed qualifying examination A.M.I.Mech.E. or equivalent examination and have served apprenticeship or pupilage in the locomotive works of either British Railways or a locomotive manufacturer. Subsequent Drawing Office experience in the design of locomotives and/or diesel engines and/or cranes is essential, coupled with a sound knowledge of modern workshop practice. Ability to write concisely will be an advantage since duties include preparation of contract specifications and technical correspondence as well as design calculations and examination and approval of drawings. Write to the Crown Agents, 4 Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2A/50235/R.A.

THE Director General of India Store Department, Government Building, Bromyard Avenue, Acton, London, W.3, invites tenders for the supply of: 824 BOILER PLATES for 120 W.G. Locos. Forms of tender may be obtained from the above address on or after the 5th September, 1958, at a fee of 10s. which is not returnable. If payment is made by cheque, it should be made payable to "High Commissioner for India." Tenders are to be delivered by 2 p.m. on Thursday, 16th October, 1958. Please quote reference No. 24/58.NNG/RLY.

THE Director General of India Store Department, Government Building, Bromyard Avenue, Acton, London, W.3, invites tenders for the supply of: 40 R.H. and 40 L.H. MAIN BAR FRAMES with Frame Clips completely machined on all faces, Studs, Bolts, Nuts, etc., 12 R.H. and 84 L.H. MAIN BAR FRAME ROUGH OXYCUT. Forms of tender may be obtained from the above address on or after the 5th September, 1958, at a fee of 10s. which is not returnable. If payment is made by cheque, it should be made payable to "High Commissioner for India." Tenders are to be delivered by 2 p.m. on Thursday, 16th October, 1958. Please quote reference No. 13/58.DB/RLY.

BOUNDED VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press, Limited, 33 Tothill Street, London, S.W.1.

